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IMPRESSIONS OF NATURE OF PERNICIOUS ANEMIA IN LIGHT OF THE NEWER KNOWLEDGE

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[EDITORIAL NOTE.—This paper, together with the papers of Drs. Ordway and Gorham, and Dr. Heath, concludes the symposium on anemia. In our last issue we published the papers of Dr. Middleton, Dr. Whipple and Dr. West and Emily G. Nichols.]

Joslin, not many years ago, joyfully exclaimed, "Insulin is here." Similarly, today we may proclaim the glad tidings that "the anti-pernicious anemia body has been found." In some respects the latter discovery is the greater of the two. It had long been supposed that the pancreas made and contained an active antidiabetic hormone. Banting's great contribution lay in the discovery of the method of its extraction. Minot and his collaborators, however, have not only shown how a specific anti-pernicious anemia body may be isolated from the liver but have been largely responsible for the idea that this organ contains such a substance as well.

It has been our privilege, since Dr. Minot first told us of the discovery, to observe the effect first of the Minot-Murphy [1] diet, and later of the Cohn-Minot [2] liver extract, in quite a large series of patients with pernicious anemia in the wards of the Massachusetts General Hospital. Our experience coincides presumably with that of all those who have properly used these methods; namely, that raw liver, cooked liver, or active fractions of liver, or raw or cooked kidney, if given in adequate amounts, precipitate in practically all cases of pernicious anemia a rapid remission and restoration to an essentially normal status of blood balance. The improvement is startling and is manifest in a few days in the mental and physical condition of the patient and in the blood picture. Transfusions at their best never effected more dramatic rescues from the brink of the grave than have a few glasses of liver pulp. The characteristic changes that take place in the blood picture are, first, a brief leukocyte rise, then a marked but also brief reticulocyte rise, and finally a steady climb in the red cell count and hemoglobin to normal levels. There is a tendency for the hemoglobin to lag behind the red count. We have observed these phenomena now in sixty-five cases. The speed and intensity of the reaction is related to the dose of anti-pernicious anemia substance and to the blood level at the start of treatment. As a rule, with raw liver or active fraction, the reticulocyte peak occurs between the fourth and the tenth days, and varies between 8 and 56 per cent, with an average of 20 per cent. The rate of red cell increase is from a fourth of a million to a million and a half a week, with an average of 700,000. None of the patients who have continued to take the treatment as prescribed have had a relapse. The full data for all the cases treated at the Massachusetts General Hospital will be reported in the near future by one of us (W. R.).

Instead of discussing facts, we wish in the short time available, as is the privilege of the interested spectator, to theorize a little about the significance, physiologic and pharmacologic, of Minot's discovery. The value of liver in promoting blood regeneration in an experimental, chronic anemia due to blood loss was, of course, proved by the work of Whipple,[3] and it doubtless occurred to many when this work first appeared that a little liver now and then would be a good thing to include in the dietary of the patient with anemia. Minot, however, took the hint of Whipple's work seriously to heart and went at liver feeding, using large quantities in an entirely scientific manner.

The expectation, in view of Whipple's results, was that liver feeding, if effective at all in human anemia, would be effective in the secondary type, although Whipple [4] himself stated in 1925 that "even in the complex anemias (human pernicious anemia, anemia with nephritis and cancer cachexia) food factors deserve serious consideration in the clinical management of the blood condition." Minot also for some years had had certain notions about the possible rôle of dietary errors in the genesis of pernicious anemia. These were stimulated, in part at least, by an opinion expressed to him by the late Dr. J. H. Wright, that the primary lesion of pernicious anemia was in the marrow, and that it resembled a tumor. This led Minot to look elsewhere than in the increased blood destruction for the cause of the disease. The difficulty seemed to lie rather in the lack of the red cell elements to undergo normal maturation. This raised the question of growth promoting factors, and the work of E. V. McCollum,[5] together with certain symptomatic resemblances between sprue, pellagra and pernicious anemia, the already known beneficial effects of liver soup in the first of

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From the Medical Services of the Massachusetts General Hospital.

Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87**: 471 (Aug. 14) 1926.

2. Cohn, E. J.; Minot, G. R.; Fulton, J. F.; Ulrichs, H. F.; Sargent, F. C.; Weare, J. H., and Murphy, W. P.: The Nature of the Material in Liver Effective in Pernicious Anemia, J. Biol. Chem. **74**: lxix, 1927. Minot, G. R.; Cohn, E. J.; Murphy, W. P., and Lawson, H. A.: Treatment of Pernicious Anemia with Liver Extract: Effects Upon the Production of Immature and Mature Red Blood Cells, Am. J. M. Sc. **175**: 599, 1928.

3. Robscheit-Robbins, F. S., and Whipple, G. H.: Blood Regeneration in Severe Anemia: II. Favorable Influence of Liver, Heart and Skeletal Muscle in the Diet, Am. J. Physiol. **72**: 408 (May) 1925.

4. Whipple, G. H., and Robscheit-Robbins, F. S.: Blood Regeneration in Severe Anemia: III. Iron Reaction Favorable, Arsenic and Germanium Dioxide Almost Inert, Am. J. Physiol. **72**: 419 (May) 1925.

5. McCollum, E. V.: The Newer Knowledge of Nutrition, ed. 2, New York, Macmillan Company, 1922.

these, and, finally, Whipple's work all served to focus Minot's attention on liver. Most fortunately, therefore, when he began his intensive liver feeding he included patients with pernicious as well as secondary anemia. And then the miracle occurred, the reverse of what most persons would have expected: namely, that whereas the patients with secondary anemia showed an improvement slow and uncertain, those with pernicious anemia, without exception, showed a rapid and certain one. The response was no less dramatic than that evoked by thyroid in myxedema, orange juice in scurvy, pituitary in diabetes insipidus, or insulin in diabetes mellitus. By analogy, the conclusion was inescapable that in liver there occurs a substance quite as specific in its effects as are any of the known vitamins or autacoids, the lack of which in sufficient quantity or form is responsible for most of the manifestations and derangements found in the syndrome called pernicious anemia. The subsequent isolation of such a body in relatively pure form by Cohn proves that this conclusion was correct.

The question now becomes: What does all this tell us about the nature of pernicious anemia? It would seem fair to assume, in view of the new facts, that pernicious anemia is in some sense or other a deficiency disease rather than an infectious, toxic or neoplastic one, as had previously been supposed; but it seems doubtful that pernicious anemia bears more than a slight resemblance to any of the other deficiencies with which we are familiar.

In the first place, it is clear that it is not a simple avitaminosis like scurvy or beriberi. It can be shown that the effect of the active liver fractions is not due to any of the known vitamins; but that is not the important point, because it might of course be a new vitamin. The relation of the specific substance to the disease, however, is by no means as simple as in the case of the known avitaminoses. A sufficient shortage of any of the known vitamins will produce the characteristic deficiency syndrome in any previously normal individual. Many persons, however, in fact, most, live habitually on diets which contain an amount of the specific substance quite inadequate to relieve or maintain in normal blood balance a patient with pernicious anemia, and yet they never develop that disease. One is forced to conclude, therefore, that the appearance of the disease is not due solely to an external shortage of a specific substance necessary to normal life. There must be in persons who develop pernicious anemia on what would be an adequate diet for the majority of mankind either some internal obstacle to the acquisition of the specific substance or, because of some pre-existing abnormality, an exaggerated requirement for that specific substance. In other words, for the production of the disease it seems likely that there needs must be something wrong with the individual, an hereditary or acquired defect, as well as something wrong with his dietary.

To date, nothing is known of the synthesis of the specific substance. It is found in mammalian liver and kidney, and apparently in avian liver as well. Thus far it has not been discovered in plants, and unless vegetable sources are subsequently found, we are forced to conclude that some animals, at least all such as can live strictly vegetarian existences, are capable of carrying out its synthesis. Whether the human being usually manufactures the whole or a part of the needed amount of the specific substance, or whether he ordinarily derives it all from his food supply, we do not know. If the former, pernicious anemia might be considered analogous to myxedema, the requirement for an abnormally large intake of the specific substance being due to a failure of internal production. The eating of liver then would relieve pernicious anemia precisely as thyroid relieves myxedema. But such a relationship we can hardly conceive as being the case. For one thing, the known autacoids are manufactured probably each by a single tissue, the parenchyma of one of the several endocrine glands. The anti-pernicious anemia body certainly cannot be regarded as an internal secretion of the liver when it occurs in nearly as great concentration in a tissue so different as the kidney. Insulin, to be sure, is found in a variety of tissues, but in very small amounts as compared with the pancreas, and there is good reason to believe that it is made in no other place than in the pancreas. But as to the question of what tissue synthesizes the anti-pernicious anemia substance, we are in the dark.

Important evidence bearing on the problem has been provided by the recent work of Castle.[6] This investigator was loath, on the discovery of the specific substance, to abandon the idea that the well known achylia had some part to play in the genesis of the disease—a deficiency disease, to be sure, but the deficiency due perhaps to a defect in protein splitting dependent on the achylia. Working on this hypothesis, he showed that a response similar to that obtained from feeding liver could be elicited in the majority of patients with pernicious anemia, studied by the feeding of skeletal muscle previously digested in a normal human stomach. This relation would be without effect except when subjected to such preliminary treatment. This finding, of course, suggests that the shortage of specific substance, from which the patient with pernicious anemia suffers, depends rather on his lack of digestive ability than on a failure to manufacture the substance within his tissues, or that a failure of internal manufacture is due to a failure in gastric digestion which must precede it, in order perhaps to supply certain elements necessary to its synthesis. It is conceivable, perhaps, that the person with normal digestive powers can derive from the products of digestion the wherewithal to manufacture the required substance, but that without such digestion it can be obtained only by ingestion performed; and it might be fair to conclude that in the patient with pernicious anemia there is an obstacle to the provision of the required amount of the specific substance surmountable by providing either (*a*) an adequate supply of the preformed substance in the food or (*b*) a type of digestion by which it, or substances from which it can be made, can be extracted from an ordinary diet.

These various discoveries, therefore, of Whipple, Minot, Cohn and Castle constitute a colossal advance; yet even so we are still ignorant of the cause of pernicious anemia. One of its features which is by no means entirely clarified by the newer knowledge is the intermittent course. Diseases based on dietary insufficiencies, such as pellagra or rickets, may be intermittent, but in these the ups and downs can be directly traced to alterations in the diet or to the amount of exposure to sunlight. Chronic infections are characteristically intermittent, but the infectious theory of pernicious anemia is exploded. Allergic phenomena are intermittent, but it will hardly do at the moment to suggest that pernicious anemia is a form of allergy.

6. Castle, W. B., and Locke, E. A.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia, read before the Annual Meeting of the American Society for Clinical Investigation, Washington, D. C., April 30, 1928.

Of course, it is possible that infection and diet may play an important rôle in determining the fluctuations in the severity of the disease. We are familiar with the depressing effect of infection on sugar burning capacity in diabetes. It is possible that the upsetting of an extremely unstable balance between blood formation and destruction by either infection or diet change is responsible for the so-called spontaneous remissions and relapses.

Further study is indicated along the line of both the nature of pernicious anemia and the biologic and pharmacologic properties of the specific substance. These two lines are by no means identical. That the supply of the specific substance is not the whole story in pernicious anemia is conceded; that the specific substance has an effect on the human organism other than to hold in abeyance the manifestations of pernicious anemia is also now proved. For example, it is effective in anemias other than pernicious but which resemble it; namely, that of fish tapeworm infestation [7] and that of sprue.[8] It also, according to Sabin,[9] accelerates the proliferation of the primitive red cells of the chicken embryo, and, according to Berglund,[10] increases the number of circulating erythrocytes in normal human beings. Whether the substance that is fed is the final product, or whether it is a precursor of the substance the organism finally needs, should be investigated. A comparison of its effects after parenteral administration with those of enteral administration may further clarify the problem. The substance as now isolated appears to be either a nitrogenous base or a simple polypeptide. The methods for studying the substance are more abundant and obvious than those for studying the disease. Light may be shed on the latter by a careful comparison with other chronic diseases of unknown etiology that run an intermittent course.

Exophthalmic goiter in this connection comes to mind at once. In this, as in pernicious anemia, there is a definite tendency to remission and relapse. The one disease, however, tends toward spontaneous recovery, the other to ultimate death. In each there is a hyperplastic tissue importantly at fault. In each this hyperplasia subsides at once on the supplying of a special substance. The action of iodine in exophthalmic goiter is no less striking than that of the liver substance in pernicious anemia. There is this difference, however, that whereas the liver substance will indefinitely hold the clinical manifestations of pernicious anemia in abeyance, iodine will not completely and permanently do the like in exophthalmic goiter. A point that should be made, however, is that in each instance the causative factor of the disease remains; the therapeutic agents merely restrain them from manifesting their effects.

From present-day evidence, then, we would conclude that:

1. Pernicious anemia is a chronic disease of unknown etiology, the chief manifestations of which can be held in abeyance so long as adequate amounts of a specific substance contained abundantly in liver and kidney are received.

2. The supply of this substance can be rendered adequate in persons suffering from the disease by feeding large quantities of natural foods which contain it (liver or kidney), or active fractions thereof, or perhaps also through the provision of the means for normal gastic digestion.

3. Shortage of the specific substance is clearly responsible for the abnormalities in the marrow and the blood. The cause of the shortage is not completely known. Castle's work suggests that the gastric defect may play an important rôle.

4. Whether the normal human being requires any extraneous supply of the specific substance or can synthesize what he needs is not yet known. The problem of whether the active substance now found is in the state that the body needs or is merely a necessary building stone also remains unsolved.

7. Sturgis, C. C.: Personal communication to the authors. Meulengracht, E.: Personal communication to the authors.
8. Wood, E. J.: Personal communication to the authors. Richardson, Wyman; and Klumpp, T. G.: Sprue: Report of a Case Treated by the Authorized Liver Extract Effective in Pernicious Anemia, New England J. Med., to be published.
9. Sabin, F. R.: Personal communication to Dr. Minot.
10. Berglund, Hilding: A Consideration of Pernicious and Secondary Anemias Based Upon Observations During Liver Treatment, read before the Annual Meeting of the Association of American Physicians, Washington, D. C., May 1, 1928.

THE TREATMENT OF PERNICIOUS ANEMIA WITH LIVER AND LIVER EXTRACT *

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This study is based on observations in twenty-five typical cases of pernicious anemia treated during the past two years with liver and liver extract. With a few exceptions the patients have at the beginning of treatment been admitted to the Albany Hospital for a period of from three to four weeks. Our criteria for diagnosis have been rigid. In making the diagnosis of pernicious anemia, emphasis has been placed on (1) clinical history, especially the presence of a sore tongue and paresthesias of the extremities; (2) the exclusion of obvious cases of secondary anemia, and (3) the confirmatory laboratory data of achlorhydria, high color index, macrocytosis and high icterus index. No case was included in the series which was in a state of frank remission. Cases presenting an initial red blood cell count above 2,800,000 were excluded, together with borderline cases in which the diagnosis was uncertain and those in which the follow-up blood counts were not complete.

The diet in the first twelve patients was made to conform rigidly to that described by Minot and Murphy.[1] Liver, either cooked or raw, in the form of a liver purée, was given daily in amounts varying from one-fourth to one-half pound (0.1 to 0.2 kg.). In the later cases a liberal general diet was found equally effective, provided the daily ingestion of sufficient liver was insisted on. Dilute hydrochloric acid was administered to the first six patients but was omitted in those subsequently treated. No less satisfactory progress was observed as a result of this omission. The liver extract used was furnished to us through the courtesy of the Pernicious Anemia Commission of the Medical School of Harvard University.

SUMMARY OF CASES TREATED

Twenty-five cases of pernicious anemia were observed over a period ranging from three weeks to twenty-one months (table 1). Nineteen patients were treated with liver and six (patients 19, 20, 21, 22, 24 and 25) with

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by Special Diet, J. A. M. A. **87**: 470-476 (Aug. 14) 1926; Diet Rich in Liver in Treatment of Pernicious Anemia: Study of One Hundred and Five Cases, ibid. **89**: 759 (Sept. 3) 1927.

the extract alone. Before treatment was begun, the maximum number of red blood cells per cubic millimeter in any one case of the series was 2,680,000, the minimum count 820,000, and the average for all cases 1,608,000. After treatment the maximum count obtained was 6,900,000 red blood cells per cubic millimeter, the minimum 2,600,000, and the average 4,330,000.

TABLE 1.—*Results in Twenty-Five Cases of Pernicious Anemia Liver and Liver Extract*

Number	Red Blood Cells	Months Duration	Red Blood Cells	Comment
1	2,680,000	21	3,936,000	
2	1,248,000	21	4,370,000	4,920,000 at second month
3	1,280,000	20	5,120,000	
4	1,940,000	6	5,670,000	Died; pulmonary embolism
5	820,000	19	4,664,000	
6	1,176,000	19	3,940,000	5,380,000 at 3 months
7	1,435,000	17	2,890,000	5,500,000 at 14 months
8	2,180,000	17	6,900,000	
9	1,350,000	16	4,390,000	5,000,000 at 13 months
10	1,640,000	14	4,689,000	5,850,000 at 8 months
11	1,300,000	14	4,120,000	4,480,000 at 9 months
12	1,650,000	14	4,288,000	5,330,000 at 4 months
13	1,432,000	13	3,720,000	4,210,000 at 3 months
14	1,024,000	13	4,280,000	5,000,000 at 7 months
15	2,340,000	½	3,248,000	Died; posterolateral sclerosis
16	1,495,000	8	5,094,000	
17	2,032,000	8	4,060,000	
18	1,770,000	8	5,394,000	
19*	1,670,000	6	4,512,000	6,080,000 at 4 months
20*	1,630,000	½	2,840,000	Died; pneumonia
21*	1,540,000	5	4,704,000	5,899,000 at 4 months
22*	1,340,000	3	4,980,000	
23	2,022,060	2	3,432,000	
24*	1,920,000	1	3,872,000	
25*	1,270,000	¾	2,600,000	

	Average Red Blood Cells
21 cases, 3 to 21 months:	
Before treatment	1,549,000
After treatment	4,473,000
Failure of count to reach 4,500,000 or decrease due in every instance to insufficient liver. No failures to respond	
25 cases, 3 weeks to 21 months:	
Before treatment	1,608,000
After treatment	4,330,000

* Six cases on extract alone.

Patient 25, who showed such a low count after treatment, that is, a rise to only 2,600,000 red blood cells per cubic millimeter, had been under treatment for only three weeks. This patient had for six months previously taken one of the other liver extracts on the market without any appreciable effect. Her response to the extract furnished us by the Harvard commission has been very satisfactory.

Thus far no case in our series failed to respond to liver or liver extract. In several instances the red blood count rose to a satisfactory level, which was maintained for a number of months, only to fall below the normal average at a later period. This was always associated with the taking of less liver, which was due in almost every instance to difficulty in obtaining the proper supply. Thus, for example, the red count in patient 13 rose from a very low level to 4,210,000 red blood cells per cubic millimeter at the end of the third month. When the patient was examined at the end of the thirteenth month, however, the red count had fallen to 3,720,000 and was associated with a marked reduction in the amount of liver eaten by the patient. Cases 6 and 7 are even more striking examples of this variation.

There were three deaths in the series, patients 4, 15 and 20, the first due to pulmonary embolism at a time when the patient showed a blood count of more than 5,000,000 red blood cells; the second due to general infection following cystitis in a case with marked cord changes, and the third resulting from pneumonia some weeks after the patient left the hospital. In the latter, his physician stated that at the time of death the patient's color was excellent although no blood examination was made. Only one death, therefore, may be said to be directly the result of anemia, and in this patient (15) the complicating cystitis led to general infection. Death occurred at a time when the red blood cells numbered more than 3,000,000 per cubic millimeter.

The clinical improvement was rapid and remarkable in all cases. The earliest sign of improvement was usually an increase in the appetite apparent within from three to five days. As a rule, all symptoms referable to anemia disappeared within from four to six weeks. Fever, sore tongue, digestive disturbances, pallor, edema and weakness were relieved with astonishing regularity, and the patients gained in weight, in one instance as much as 50 pounds (22.7 kg.). Achlorhydria was found to persist in three patients of our series whom we reexamined. Patients with advanced spinal cord changes did not improve. Ataxia and abnormal reflexes remained, while milder disturbances of the nervous system, such as headache, dizziness, insomnia, irritability and tinnitus completely disappeared. Paresthesias usually were completely relieved. Vibration sense, which was absent in one case as far as the iliac crests, returned within two months to the level of the knees.

CHANGES IN THE BLOOD

The most significant and the earliest change which occurs in the blood as a result of the treatment is the delivery to the peripheral circulation of new, young red blood cells (reticulocytes), the increase in which is shown graphically in chart 1. From a level of approximately 1 to 3 per cent they rise to 5 or 6 per cent within from three to five days, reaching a maximum of from 10 to 30 per cent in about ten days and falling again by the fifteenth to the twentieth day. The red blood cells (charts 2 and 3) show a prompt rise, in some instances reaching a level of 4,000,000 per cubic millimeter within a month, although there is a difference in the individual cases as to the rate of increase. This does not always seem to depend on the amount of liver or liver extract

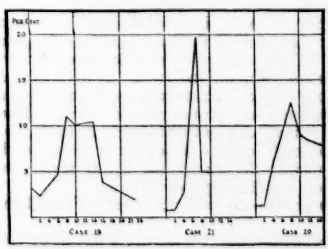

Chart 1.—Percentage counts—reticulocytes—in three cases of pernicious anemia in which liver extract was fed.

given. The hemoglobin percentage tends to rise somewhat more slowly. The color index gradually falls to 1 or slightly below. At the end of the first week the icterus index begins to fall, reaching normal values within from three to four weeks. In one of our cases the decline was from 40 to 8. This fall of the icterus index, of course, is accompanied by the disappearance of the peculiar yellow color of the patient's skin. Frequently an abnormal redness of the skin develops before the red blood count has returned to normal, so that the

general appearance of the patient is not a true index of the number of red blood cells. The morphology of the red blood cells gradually returns to normal as the macrocytes, microcytes, poikilocytes and polychromatophilia disappear. Accompanying the increase of the red blood cells the white blood count rises, polymorphonuclear leukocytes and the eosinophils appearing in greater numbers. The platelet count also increases again to normal figures. In one of our cases the eosinophils rose to 25 per cent after one month of liver diet.

The clinical improvement and the return of the blood to normal, as described, was the same in the patients treated with liver extract as in those treated with liver. In chart 4 the prompt rise of the red blood count to 4,000,000 red blood cells per cubic millimeter or above within two months is indicated.

It is, of course, evident that definite conclusions as to the value of liver treatment cannot be drawn from a small series of twenty-five cases. A critical survey of all reported cases which have been carefully studied was therefore made with the idea of presenting a complete survey of all the evidence at present available bearing on the successful application of the liver diet. In selecting cases from the literature, the following were excluded: (1) cases in remission with red blood counts above 2,800,000 per cubic millimeter; (2) cases in which the diagnosis was uncertain; (3) cases in which there were insufficient data or in which blood counts were lacking, and (4) cases in which manifestly inadequate amounts of liver had been given. Up to the present time, 553 carefully studied cases of pernicious anemia have been treated in various parts of the world with liver or liver extract. To this number we are able to add twenty-five cases, making a total of 578 (table 2). Of this large series 387 have been treated with liver and 191 with extract alone. The results have been uniformly successful and remarkable in all instances. Starting with an average red blood count of approximately 1,500,000 per cubic millimeter, all of these cases reached a level of 4,000,000 or more red blood cells with very few exceptions. Minot, Cohn, Murphy and Lawson [2] have recently reported favorable results in eighty-nine patients treated with the extract of Cohn, and, in addition, in more than seventy patients treated with differently prepared extracts, with prompt and striking improvement in the health of all the patients. Reports from England, Germany and this country show thirty-two cases treated by twelve different liver extracts with equally marked success.

TABLE 2.—*Reported Cases of Pernicious Anemia Treated by Liver and Liver Extract*

Reported by	No. of Cases	Red Blood Cells Before	Duration of Treatment	Red Blood Cells After
Minot and Murphy, Boston. Sturgis, Isaacs, Smith, Ann Arbor	108	1,500,000	4-36 mo.	4,500,000
	50	1,500,000	1-7 mo.	4,000,000
Means, Boston	32	1,500,000	Not stated	4,800,000
Huston, Ann Arbor	30	1,480,000	2 mo.	3,250,000*
Seyfarth, Germany	18	1,433,000	1-5 mo.	3,950,000
Seyfarth, Germany	11	1,540,000	6-13 mo.	4,547,000
Spence, England	19	Not stated	1-11 mo.	4,500,000
Feiter, Pittsburgh	14	Not stated	10-18 mo.	4,000,000
Bill, Portland	10	1,835,000	On discharge	4,685,000
Starr, Chicago	10	1,550,000	2-14 mo.	4,737,000
McCrie & Gulland, England	23	1,630,000	1-8 mo.	4,180,000
Reports—less than 10 cases	69	1,516,000	18 mo.	4,377,000
Ordway and Gorham	25	1,608,000	3 wk.-21 mo.	4,330,000
	419	Of these 32 on extract alone		
Minot et al.	159	Of these 159 on extract alone		
Total	578		191 on extract alone 387 on liver alone	

* Seventeen cases, return visit red blood cells 4,150,000.

SUMMARY AND CONCLUSIONS

1. The results in twenty-five cases of pernicious anemia treated by us, plus 553 cases carefully detailed in the literature, making a total of 578 cases in all, show that liver or a potent extract in sufficient amounts benefited all remarkably.

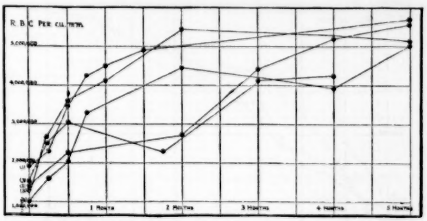

Chart 2.—Red blood cell counts in five cases of pernicious anemia after liver diet (series A).

2. Strict adherence to the original Minot and Murphy diet is not essential. A balanced, liberal, general diet plus sufficient liver is equally effective.

3. The administration of dilute hydrochloric acid is unnecessary, as equally prompt improvement was obtained when this was omitted.

4. The clinical changes are rapid and remarkable and lead to clinical recovery. Achlorhydria and advanced cord changes persist almost without exception. However, in two cases the return of hydrochloric acid has been reported, and recently Bubert [3] has reported remarkable changes in a case of lateral sclerosis which contradicts the general rule.

5. Our observations on the changes of the blood confirm those of Minot and Murphy and other workers. The striking features are: (*a*) The increase in reticulocytes; (*b*) the marked rapid rise of red blood cells and hemoglobin with fall of color index; (*c*) the fall of the icterus index; (*d*) the gradual return of normal morphology of the red blood cells, and (*e*) the increase of the white blood cells, polymorphonuclear leukocytes, eosinophils and platelets, all indicating stimulation and increased activity of the bone marrow.

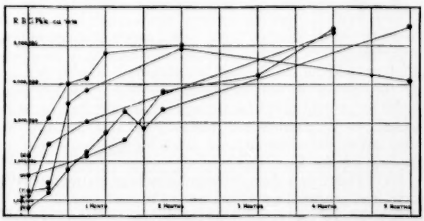

Chart 3.—Red blood cell counts in five cases of pernicious anemia after liver diet (series B).

6. No failures occurred in our series in any instance. Lack of success of the liver diet is due to one of the

2. Minot, G. R.; Cohn, E. J.; Murphy, W. P., and Lawson, H. A.: Am. J. M. Sc. **175**: 599 (May) 1928.

3. Bubert, H. M.: Subacute Combined Sclerosis: Report of Case Associated with Pernicious Anemia Improved by Minot-Murphy Diet, J. A. M. A. **90**: 903 (March 24) 1928.

following circumstances: (*a*) infection or other complication; (*b*) the giving of insufficient liver; (*c*) the incorrect diagnosis of the case, or (*d*) the effect of multiple transfusions. There are a few instances reported following multiple transfusions in which the response to the liver diet has been unsatisfactory. There are many instances, however, in which, in spite of multiple transfusions, the patient has responded in a satisfactory manner. (*e*) In a very few cases there

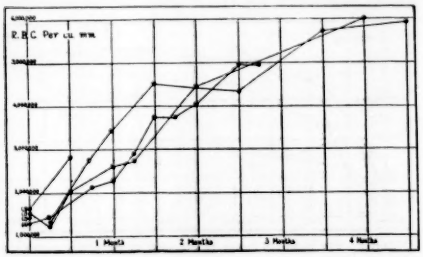

Chart 4.—Red blood cell counts after the feeding of liver fraction in four cases of pernicious anemia.

is apparently present an unexplained failure, due possibly to a lack of reactive power on the part of the bone marrow. These cases are exceptionally rare, and one should not conclude that one is dealing with such a case until months of persistent feeding with a large amount of liver have been diligently followed.

7. Liver appears to exert a specific influence on the development of faulty red blood cells. It has no effect on the underlying pathologic process and hence cannot be called a cure.

8. The quantity of liver administered daily should be from one-fourth to one-half pound. It may be given raw or cooked or as a potent extract. The maintenance dose varies, so that blood counts at monthly intervals are necessary in order to gage correctly the amount of liver necessary for the individual patient.

9. The following possible dangers may arise:

(*a*) With the present general widespread use of liver in all types of anemia there is a danger that secondary anemias due to surgical conditions which may be operated on will be overlooked. Carcinoma of the fundus of the uterus or carcinoma of the colon, which may yield to proper surgical treatment, should not be subjected to a therapeutic test. For this reason we emphasize the necessity of accurate diagnosis before the use of the liver diet.

(*b*) There is a danger from impotent extracts. We have had personal experience with two of these.

(*c*) There are reports in the literature of two cases of gout developing in individuals who were taking a high liver diet. This is unusual but a possible complication to be borne in mind. Hypoglycemia has been reported in a few instances, which promptly disappeared when the intake of liver was lessened.

(*d*) Transfusion is still of value in desperate cases in which the red blood count is below a million. It should be used to tide over a desperately ill patient, so that he may later take the liver diet.

(*e*) One should bear in mind the possibility of remote renal effect after years of diet. We have not seen any ill effects in our cases, but two instances of albuminuria and cylindruria have been reported.

10. The contributions of Whipple and Robscheit-Robbins and of Minot and Murphy to the treatment of pernicious anemia are epoch-making, and offer a brilliant example of the successful application of scientific methods to the solution of clinical problems.

214 State Street.

PERNICIOUS ANEMIA TREATED WITH LIVER DIET AND LIVER EXTRACT *

ELMER H. HEATH, M.D.
BALTIMORE

An extensive review of the literature will not be attempted here as this phase of the subject has been admirably discussed in the two reports of Minot and Murphy [1] dealing with the treatment of pernicious anemia by dietary means. In the Johns Hopkins Hospital clinic, liver diet was first used almost two years ago. During this time, twenty-four undoubted cases of pernicious anemia have been treated, nineteen by the liver diet and five by liver extract.

We have attempted to arrange the diet in the exact manner described by Minot and Murphy [2] in their original paper. The only departure made, particularly applying to our later patients, was an increase in the rather low fat constituent to make the diet more palatable. From a practical standpoint, it would seem that the most important reason for having the fat content very low is to keep milk products of the diet at a minimum, in order that the patients with marked weakness and anorexia may not fill up on milk and cream at the expense of eating liver. We have endeavored to place the emphasis on liver consumption, believing that it was this constituent of the diet per se which was responsible for the remarkable benefit observed. Liver has been prepared both cooked in various ways and raw,

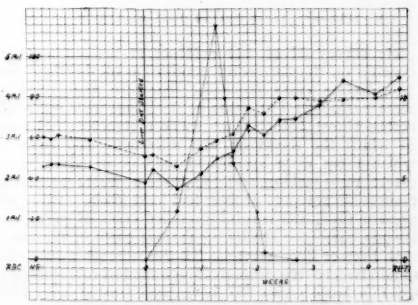

Chart 1.—Early blood changes induced by liver diet in R. M., white, aged 54. In the charts, the heavy unbroken line indicates red blood cells; the dotted line, hemoglobin, and the fine unbroken line, reticulocytes.

as so-called emulsified liver. Five patients received liver extract mixed with orange juice in quantities varying from the equivalent of from 400 to 600 Gm.

* From the Johns Hopkins Hospital.

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87**: 470 (Aug. 14) 1926; A Diet Rich in Liver in the Treatment of Pernicious Anemia, ibid. **89**: 759 (Sept. 3) 1927.

2. Minot and Murphy (footnote 1, first reference).

of liver a day, one dose morning and night. In order that we might compare the effects of liver and liver extract, the patients receiving the latter ate a diet similar to the Minot-Murphy diet, save that no liver, kidneys or sweetbreads were included. We are indebted to the Pernicious Anemia Commission of the Medical School of Harvard University, which, through the Eli Lilly Company, has been willing to furnish us with a supply of satisfactory liver extract. All patients

TABLE 1.—*Age Distribution by Decades*

Age	Number of Cases
20–29	1
30–39	3
40–49	6
50–59	7
60–69	5
70–79	2

received dilute hydrochloric acid in doses ranging from 1 to 2 teaspoonfuls three times a day fifteen minutes before meals.

In all instances in which it was practicable, a control period of a week or longer was instituted immediately

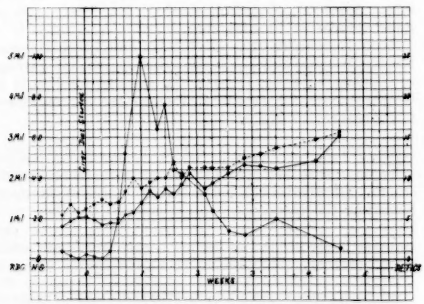

Chart 2.—Early blood changes induced by liver diet in E. A., white, aged 73.

after the patient's admission to the hospital, during which time the patient did not receive any liver. By this method we were able by repeated blood counts to obtain more accurate information of the exact initial blood level and in addition we could determine whether or not the patient might be in the process of a spontaneous remission. In a few instances the patient's condition appeared too precarious for the usual control period, so that the liver diet was instituted immediately. Two patients were admitted in such an alarming condition that transfusion was done on admission followed by the administration of the liver diet.

Much ingenuity and persistence on the part of both physician and nurse have been necessary to secure the feeding of adequate amounts of liver to most of our patients during the first week. But certainly in the majority of patients, the condition changed so rapidly that within from ten days to two weeks a remarkable improvement in the appetite was manifested. Not a few patients became voraciously hungry with an almost insatiable appetite, especially for liver. The subjective change in patients is surely as striking as the objective blood changes, if not more so. The patient soon becomes brighter and feels stronger; the persistent diarrhea stops and after two or three weeks of faithful adherence to the diet one frequently observes that the patient has a remarkable pink complexion (almost a flushed face) not at all commensurate with the comparatively low blood count.

As stated, nineteen patients received the liver diet and five liver extract. There was one negro included. There were eight females and sixteen males.

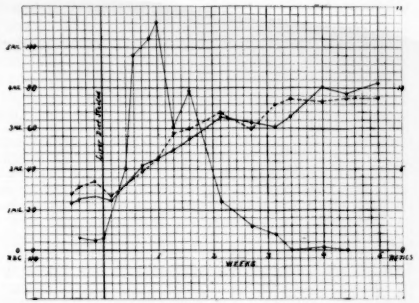

Chart 3.—Early blood changes induced by liver diet in W. B., colored, aged 50.

The age distribution by decades will be found in table 1.

Nineteen patients were in their first relapse at the time of admission to the hospital. Five patients had experienced previous relapses, one patient, three, another two and three others one relapse previous to the one present on admission. Three of the five were treated in the dispensary with brilliant results, but numerous observations on the early blood changes during remission were not possible. In the remaining two cases, the course of events during remission was entirely similar to that occurring in the other patients.

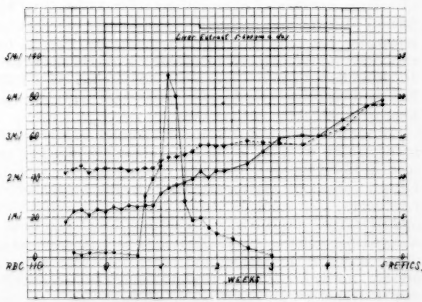

Chart 4.—Early blood changes induced by liver extract in R. A. I., white, aged 67.

Nor was the remission any different in four other patients, two having had numerous transfusions in the past and two receiving transfusions on admission to the hospital.

BLOOD CHANGES OBSERVED DURING REMISSION

When the patients were once placed on liver, careful studies of the blood and urine were made. A complete blood count was done every other day. A daily reticu-

locyte count was done for the first two or three weeks until normal values were again obtained. The urine was tested daily for urobilin, while a quantitative estimation of the blood bilirubin content was performed every few days. The patients were weighed frequently.

The accompanying charts illustrate the early changes observed in the red cell and reticulocyte counts and in the hemoglobin. Consistent with the usually high color

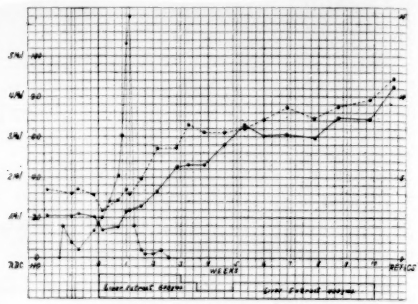

Chart 5.—Early blood changes induced by liver extract in C. G., white, aged 39.

index, it will be noted that on admission the curve for the red cells is below that for the hemoglobin. As a remission advances these curves tend to converge or even to intersect, indicating a lowering of the color index to unity or less. In the average case, the peak of reticulocyte rise occurred from eight to ten days subsequent to starting liver, reaching normal again usually between the second and third weeks. Generally speaking, the reticulocyte rise is higher in those patients with the lowest blood counts on admission. This point has been brought out beautifully by an analysis of a large number of observations recently reported by Minot, Murphy and Stetson.[3] Occasionally one sees an unusually low and prolonged reticulocyte rise to be explained on the basis of insufficient liver consumption. In patients with initial red blood cell counts of 3 million or over, the reticulocytes rarely rise more than a total of 5 per cent on liver diet.

An early rise in the colorless corpuscles of the blood occurs along with an increased number of platelets as seen in blood smears, a finding comparable to the well known course of events observed during spontaneous remissions. A study of blood smears, both in fresh and in stained preparations, shows a gradual disappearance of the macrocytosis. Red cells become more and more uniform in shape and size until the smears appear normal. These changes may be accurately demonstrated by the construction of Price Jones curves made at various intervals during a remission. This has been done in several cases in which results have been similar to those depicted in chart 7. Two changes in the general character of the curves may be noted. First, the peak of the curve shifts from right to left, approaching normal. Second, the base line becomes less dispersed than formerly. Reference to chart 8 shows two Price Jones curves made on smears taken from patients with pernicious anemia with nearly normal blood figures. The blood smear taken from J. H. (Price Jones curve A) appeared normal so far as we could tell. The curve B taken on J. B. still has its peak to the right of normal, indicating a slight persistence of macrocytosis. These curves have been compiled from measurements of 500 red cells, an ocular micrometer being used.

3. Minot, G. R.; Murphy, W. P., and Stetson, R. P.: The Response of the Reticulocytes to Liver Therapy, Am. J. M. Sc. **175**: 581 (May) 1928.

OTHER CHANGES OBSERVED DURING REMISSION

During the second week of adequate liver eating, patients lose their characteristic icteric tint. Coincidently, the blood bilirubin value falls to normal and urobilin disappears from the urine. We have observed regeneration of lingual papillae in some cases with a return of the tongue to normal appearance.

We have watched with especial interest the effect of liver diet on symptoms and signs of central nervous system disorder. The results have been variable. In some instances, a distinct amelioration or even disappearance of numbness and tingling in the extremities occurred. On the other hand, in two cases, these symptoms became much more marked as the blood count reached normal than at any previous time. Inspection showed marked cyanosis of the hands not unlike the phenomenon seen in polycythemia. Improvement in vibratory sense has been noted frequently. By and large, however, patients showed the least striking improvement in this regard.

Gain in weight was the rule in nearly every case. During hospitalization, the patients gained an average of 9 pounds (4 Kg.), while the average total gain in weight during the varying follow-up periods amounted to 20 pounds (9 Kg.).

FACTORS INFLUENCING RAPIDITY OF REMISSIONS

Patients who take liver diet or the extract in adequate amount improve in a surprisingly uniform manner. Knowing the blood level on admission together with knowledge of the period of liver therapy, one can approximately predict in the usual case just about what blood level may be expected at a given time. Certain

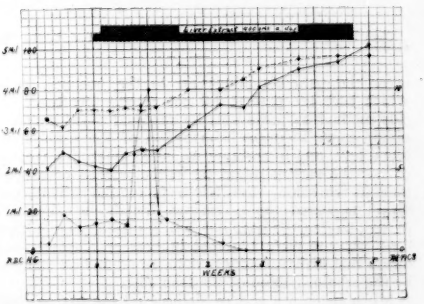

Chart 6.—Early blood changes induced by liver extract in M. O., white, aged 54.

factors have been found to interfere with the rate of blood regeneration. In the first place, insufficient ingestion of liver has resulted in prolonging the period of recovery very materially in two of our female patients who experienced unusual distaste for liver. However, in both patients the ultimate result was entirely as successful as in other patients.

Infection interferes with the rate of blood regeneration as exhibited in two of our patients, one with a

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severe cystitis and pyelitis, the other with pneumonia. In both instances there was a marked fall in both the red cell count and the hemoglobin during the period of active infection. After subsidence of the infections, blood regeneration again occurred at its normal rapid rate.

In two old patients, both over 70 years of age, blood regeneration has seemed less active, and also the blood

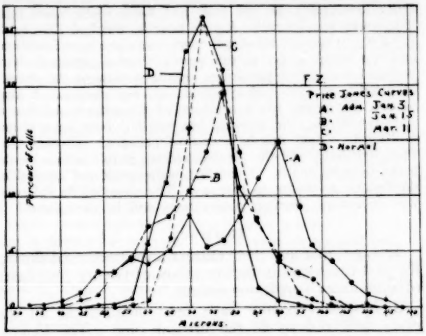

Chart 7.—Three Price Jones curves compiled from blood smears taken from the same patient (F. Z.). The blood values obtained at the time the blood smears were taken were: January 3, red blood count, 640,000, hemoglobin, 18 per cent; January 15, red blood count, 2,545,000, hemoglobin, 48 per cent; March 11, red blood count, 4,160,000, hemoglobin, 76 per cent.

level on discharge from the hospital has been lower. Subsequent observation of these two patients, however, has shown entirely normal blood levels in both.

PERSISTENCE OF ACHYLIA

All patients included in this series had achylia. At least two undoubted cases of pernicious anemia have been reported in which free hydrochloric acid has returned to the gastric juice after the patient had had achylia for several years. In one instance reported by McPeak and Neighbors,[4] the change took place after liver diet. The other case was reported by Shaw[5]

TABLE 2.—*Final Red Blood Cell Counts*

Red Cell Counts	Cases
5.0 millions or more	6
4.5 to 4.9 millions	10
4.0 to 4.4 millions	5
3.5 to 3.9 millions	2
2.5 to 2.9 millions	1

before the days of liver therapy. In all, thirty-three retests of gastric juice have been made on eighteen of our patients at intervals of anywhere from two months to a year and a half after the institution of liver diet. In no case has free hydrochloric acid been demonstrated.

RESULTS OF TREATMENT WITH LIVER

Five patients have been followed for a year and a half or more, four for periods varying between a year and eighteen months, and seven for periods varying between six and twelve months, while the remaining eight patients have been observed for less than six months. The final red blood cell counts for the reported series are noted in table 2.

A word concerning the foregoing results may not be out of place. The single patient with a red blood cell count below 3 millions was followed for only three weeks. The two patients with final counts below 4 millions had been observed for six weeks and three months, respectively. In general, the patients with higher red cell counts have been followed for the longer periods of time.

It is of interest to compare these results with some reported in 1924 by Willson and Evans,[6] who analyzed the clinical histories of patients with pernicious anemia in this clinic from 1918 to 1922, inclusive. The following suggestive excerpt is taken from their report.

> In all the red counts done on these 111 patients not one of 5 millions was recorded and only two of 4½ millions. These last counts were obtained on patients just before discharge. There were eleven patients who, when discharged, had red counts between 4 and 4½ million, making only thirteen (11.7 per cent) who, when discharged after treatment did not have red counts lower than 4 millions. . . . Among our patients there were ten (9 per cent) on admission, and thirty-six (32.8 per cent) on discharge, who had hemoglobin values over 70 per cent.

Among sixteen patients receiving the liver diet, the average hospital stay was thirty-seven days. The average red blood cell count on discharge was 3.6 millions, the average hemoglobin 76 per cent. Of the five patients receiving liver extract, the average period of hospitalization was forty-six days, the average red blood cell count and hemoglobin value on discharge being 4 millions and 83 per cent, respectively.

TWO UNUSUAL CASES OF ANEMIA TREATED WITH LIVER

It will be of interest perhaps to include in this report a summary of two cases of anemia, one that did not show any improvement whatever and a second one that showed much improvement.

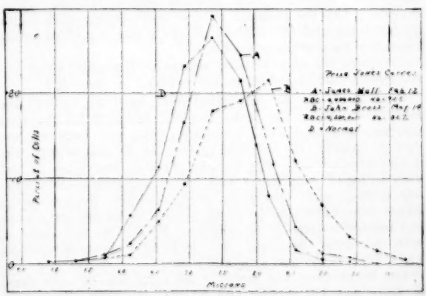

Chart 8.—Two Price Jones curves, *A* and *B*, compared with normal curve, *D*. Curves *A* and *B* were compiled from blood smears taken from two patients with pernicious anemia.

CASE 1.—J. A., a man, aged 43, a Polish blacksmith, entered the medical service of the Johns Hopkins Hospital, Dec. 2, 1926, because of loss of strength and weakness. He had three sons with hemophilia. He had had typhoid at the age of 10; otherwise his past history was irrelevant.

For the past six months he had noted gnawing epigastric pain, especially a half hour following meals. For two months

4. McPeak, E. M., and Neighbors, DeW.: Minot-Murphy Diet in Pernicious Anemia: Report of Five Cases, South. M. J. **20**: 926 (Dec.) 1927.

5. Shaw, M. E.: A Case of Apparent Recovery from Addison's Anemia and the Associated Achlorhydria, Guy's Hosp. Rep. **76**: 294 (July) 1926.

6. Willson, C. R., and Evans, F. A.: An Analysis of the Clinical Histories of Patients with Pernicious Anemia in the Johns Hopkins Hospital from 1918 to 1922, inclusive, Bull. Johns Hopkins Hosp. **35**: 58 (Feb.) 1924.

his legs had been weak and swollen at night. He had not worked for six weeks. Five days prior to entry, his nose had bled profusely. He had lost from 10 to 12 pounds (4.5 to 5.4 Kg.) in the past three weeks.

The patient was very pale and heavy set, and on physical examination appeared to have lost weight moderately. The sclerae were slightly icteric. There was marked dental caries. A blowing systolic murmur was audible over the precordium. The liver edge was smooth, not tender and palpable three fingerbreadths beneath the costal margin. There was a peculiar brown mottling over the lower two thirds of both legs. The prostate was normal. The patient had a mild fever up to 101 F., with a pulse rate between 100 and 110 and normal respirations during most of his hospital stay of several months. The blood pressure was normal. The weight was 144 pounds (65 Kg.) on admission. He gained weight before death, which resulted from anasarca.

The red blood count was 1,200,000; the hemoglobin was 25 per cent and the white blood count was 7,800. On a smear the differential count was not remarkable. The red cells showed moderate anisocytosis and poikilocytosis with a tendency to microcytosis. There was definite achromia. Seven normoblasts were seen on counting 100 white cells. The platelets were slightly decreased. The bleeding and clotting times were normal. The platelet counts were only slightly low. The fragility of the red cells was normal. The urine was persistently positive for both bile and urobilin. The blood Wassermann reaction was negative. In the van den Bergh test, the first test was 6½ units direct, and later trace indirect. Free hydrochloric acid was present in the gastric juice on several occasions. The stools were persistently negative for occult blood and parasites.

X-ray studies of the gastro-intestinal tract, the chest and the bones did not show any abnormalities.

The patient took the liver diet very well for five or six weeks without any improvement in the blood picture whatever. Death finally occurred the middle of May, as a result of myocardial insufficiency and anemia.

Autopsy showed a hyperplastic bone marrow, with marked siderosis of the liver and spleen, conditions indistinguishable from pernicious anemia (permission to examine the spinal cord was not granted).

Clinically we had not considered pernicious anemia seriously because of (1) the absence of papillary atrophy; (2) the absence of symptoms and signs of central nervous system disorder; (3) the presence of free hydrochloric acid in the gastric juice, and (4) a blood picture which resembled rather secondary than primary anemia.

This was the only peculiar unexplained anemia which did not improve strikingly under the influence of liver diet.

CASE 2.—J. P., an unoccupied man, aged 69, entered the medical service of the Johns Hopkins Hospital for relief of diarrhea and weakness. His father and two brothers had died of cancer. He had had typhoid at 30; the history was otherwise irrelevant. For the past three or four years he had been bothered with minor and varied symptoms. Weakness was perhaps most prominent, preventing him from working. About four months prior to admission, he became very weak and markedly dyspneic on exertion. He had marked anorexia with persistent diarrhea. He had lost about 35 pounds (15.9 Kg.) in the past year and a half.

The temperature was normal; the pulse was 66; the blood pressure was 120 systolic and 60 diastolic. His weight was 85 pounds (38.6 Kg.) on admission.

The patient appeared as a weak, senile old man with evidences of marked loss of weight, extreme irritability, and marked pallor of the skin and mucous membranes. The skin was dry with reddish purple discoloration over the backs of the hands. There was a hemorrhage visible on the left retina. Marked papillary atrophy of the tongue was present, with oral sepsis. The heart was normal save for a systolic murmur best heard over the aortic area. There was marked abdominal distention. There was no edema. The reflexes were equal and active. There was a marked loss of vibration sense over the malleoli on the right, with a slight loss on the left.

The red blood count was 1,408,000; the hemoglobin was 28 per cent, and the white blood count was 3,800. A smear showed a picture consistent with that in pernicious anemia. There was a positive test of urobilin in the urine. Free hydrochloric acid was present in the gastric juice. Under liver diet, the patient improved markedly, though the diarrhea persisted for some time. No parasites were found in the stools, which were persistently negative for occult blood. A barium enema showed a filling defect in the sigmoid. He refused proctoscopic examination.

After two months' stay in the hospital, he gained 20 pounds (9 Kg.). The blood on discharge showed 4,096,000 red blood cells; hemoglobin, 80 per cent, and 8,400 white blood cells. The smear was normal. A year later he weighed 120 pounds (54.4 Kg.); the red blood cell count was more than 5 millions, and the filling defect in the sigmoid region persisted. One hesitates to call this pernicious anemia in view of the absence of achylia, glossitis and symptoms of cord changes. It may be that the patient has a neoplasm of the large bowel, but if such is the case, the recovery has certainly been unusual and prolonged. Could this be a case of pellagra? He had diarrhea, irritability and the peculiar reddish purple lesions on the backs of both hands. These last were considered atypical of the lesions occurring in pellagra. The diagnosis in this case was uncertain. Further observations will be of interest.

SUMMARY

1. Liver diet and liver extract have been used during the past two years in the treatment of twenty-four cases of undoubted pernicious anemia.

2. Excellent results have been obtained in all the cases followed up to the present time. The longest period of observation of cases included in this report is twenty-one months.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. MIDDLETON, DR. WHIPPLE, DR. WEST AND EMILY G. NICHOLS, DRS. MEANS AND RICHARDSON, DRS. ORDWAY AND GORHAM, AND DR. HEATH

DR. NELSON G. RUSSELL, Buffalo: There has been such a uniform report of the results of the liver diet in the treatment of pernicious anemia that there is very little left for discussion. There are one or two little points that one might bring up. First, is dietetics under the head of pharmacology; that is, has the specific factor in this treatment reached a point where it can be put under the head of pharmacology? Second, what are we treating, in the nature of the disease? Dr. Heath brought up one thing in regard to the blood pigment in the blood, when he spoke of the reduction in the index in the second week. We have made charts in every one of our cases and in every instance the index, which ranges from 20 to 30, has come to the normal of 3 or less in from four to seven days, generally before the hemoglobin and cell count have begun to go up. Assuming that the icteric index measures blood destruction, it may be considered that the destruction is stopped before stimulation of blood building takes place. On the other hand there is a record of at least one normal person in which the blood increased from normal to polycythemia (with the symptoms) on the administration of liver extract, so that apparently whatever it may be that causes the reaction has the double effect. I cannot see any other way than to agree with Dr. Means that the malady must be deficency disease. What the disease does in the first place is still, in my mind, a question. After listening to these papers it seems to me that one of the only points left to discuss is whether the system is weak on blood production or strong on blood destruction, and there is no one quite ready to answer that question at the present time.

DR. H. M. CONNER, Rochester, Minn.: Our results with liver and liver extract agree with those here reported. Whipple's experiments with various foods in experimental anemia, and the application of the liver diet to pernicious anemia by Minot and his collaborators, are great steps in medical progress. The separation of the effective substance by Cohn, West and others deserves the highest commendation and greatly simplifies liver therapy. It has been our experience, as it has been that of others, that multiple transfusions prior to the institution of liver therapy seem to make liver treatment less satis-

factory. I would warn against liver therapy in anemia due to an overlooked malignant condition, of which I have seen several examples. I agree with Dr. Means that pernicious anemia is probably a deficiency disease. None of the known vitamins are found in liver extract, but it is not proved that deficiency of known or unknown vitamins may not be a factor in the causation of pernicious anemia. Before the announcement of Minot and Murphy's diet I began the use of foods rich in vitamins, including 60 Gm. of liver daily, which was almost the same amount as was included in our standard anemia diet by Giffin soon after Whipple's work in 1920. Results in sixty controlled cases are comparable with those following the liver diet, except that they were probably a little slower in developing. A group starting treatment with an erythrocyte count under 2,000,000, on my diet, containing 60 Gm. of liver daily, showed an average daily increase greater than that of a comparable group recently reported on by Minot and his co-workers with two and one-half times as much liver (150 Gm.). My results indicate the probable existence of an effective substance in my diet in foods other than liver or kidney, most likely in some of the vegetable substances, but in lower concentration. It seems indicated by the work of Minot and others and by my own work and that of Koessler and collaborators with a diet selected for its rich vitamin content, that pernicious anemia is a deficiency disease; how it develops is uncertain. I have used copper and iron, as suggested by Hart and Steenbock, in two cases without benefit, and large amounts of peaches and apricots, suggested by the work of Whipple, without conclusive results. I have at present some patients taking large amounts of cabbage juice and also large amounts of the ash of cabbage, suggested by the work of Hart and Steenbock, with encouraging results.

DR. RAPHAEL ISAACS, Ann Arbor, Mich.: The papers today have emphasized once more the difference between pernicious anemia and anemias from other causes, suggesting that they are fundamentally different in their cause and in their general pathologic manifestations. Dr. Whipple pointed out that fish liver was not very effective in secondary anemia. At the Simpson Memorial Institute fish liver was fed to one patient. There were slow but definite results, not at all marked as in the case of liver from beef or from other mammals. This patient subsequently received beef liver and gave a very well marked response. Fish liver contains some of the substance but in very small amount. Strawberries fed in large quantities to one patient had no effect. Subsequently the feeding of liver produced a profound effect. The question comes up as to whether this substance in liver and liver extract goes to make red corpuscles or whether it stimulates some organ in the body to produce something which acts on the corpuscles secondarily. I have taken large amounts of blood and subjected them to the procedure described by Dr. Cohn in making his liver extract, thus making an extract from blood just as is done from liver. This extract was totally ineffective in producing remission. In the same patients liver extract produced a marked remission. I believe then that liver extract has not become a part of the blood corpuscles but acts secondarily to produce the blood changes. In this connection, we did some experiments with a little animal called planaria. If it is cut in half, the cut ends become embryonic and complete animals regenerate. If the head is cut off a new head will grow. If such animals are put into a very dilute solution of liver extract they no longer grow a new head; the wound just heals up and the animal dies. When these animals were left in liver extract of different strengths, different degrees of new growth were noted. On the question of the use of hydrochloric acid, we differ in our beliefs as to whether it is effective or not. I believe that hydrochloric acid hastens the relief from some of the neurologic symptoms.

DR. HILDING BERGLUND, Minneapolis: It is clear that in a very short time it will be a fundamental fact that through the feeding of liver we can treat successfully the most dreaded symptoms in pernicious anemia. It is remarkable how quickly this has come about. At the same time, however, this contribution has opened a great variety of complex problems in the field of pharmacology, problems that we cannot clearly define. Dr. West's work is an attempt with precipitation, and the results he has obtained, thereby showing that his compound is not precipitated by the silver being a basic compound, proves the basic nature of the compound, and it proves that precipitation has not destroyed the compound, since he has obtained a response. It is a definite step forward. Dr. Means has ventured into the unknown in discussing the nature of pernicious anemia. If we say that it is a deficiency disease that does not mean a great deal more than applying another sweeping term to a problem, instead of seeking further investigating. One thing might be emphasized, and that is that our own early conception that pernicious anemia was caused by increased blood destruction cannot very well be upheld. The reticulocyte phenomenon does not allow us to interpret in the ordinary case of pernicious anemia characteristic features such as increased blood destruction. Hemosiderosis of organs still remains important, and it will be for future workers to teach what the significance of hemosiderosis is.

Dr. Middleton touched on the question of secondary anemias. He had some cases in which there was a definite result from the treatment with liver or liver extract. The majority of cases showed no response.

In discussing secondary anemia we have to alter our whole position somewhat. One can effect stimulation of the number of red cells but cannot ordinarily accomplish any better filling of these red cells with hemoglobin. In one case of secondary anemia we gave a bone marrow extract and secured a rapid increase in the number of red cells and a significant increase in the amount of hemoglobin. In a case of a toxic type of secondary anemia, in which the count as well as the hemoglobin was low, we obtained a beautiful response from the liver extracts supplied by Cohn, both in the red cells and in the hemoglobin. This shows the necessity of reporting our cases of secondary anemia, so that those reports can be used in a later classification of secondary anemias.

DR. J. P. SCHNEIDER, Minneapolis: Since we in Minnesota are apparently in a pernicious anemia belt, very much as we are in a goiter belt, we have been interested in the disease for many years. I have worked with it as my specialty for fifteen years. I do not feel that this is a deficiency disease in the real sense of the word. To consider it as such is taking rather a narrow view of the disease. Let us consider for a moment these few main facts. What is the fundamental finding in every case? Certainly not anemia. It is "leukanemia." The second fundamental phenomena are the evidences of inflammation of the gastro-intestinal tract which cause glossitis, pharyngitis, esophagitis, gastritis and enteritis. And finally, there is the posterolateral cord involvement, in which the patient may go on to death. Therefore, when we take this broader view, we must consider that liver is a substance which supplies a deficiency in the anemic individual, but that with this explanation for supplying the deficiency, we are not recognizing the nature of those conditions which give us pernicious anemia. I have as a working hypothesis the idea that we are dealing with a familial condition, with superadded infection to which these persons are not immune.

DR. A. C. IVY, Chicago: Dr. Means has referred to the possibility that achylia may play a part in the causation of anemia. Several other speakers have referred to that possibility. In our work on gastric secretion we have made pouches of the entire stomach in dogs with duodeno-esophageal anastomosis, so that an absolute achylia gastrica was produced experimentally in these animals. We have observed about fifteen of these animals. Some of these dogs have developed anemia and others have not. Their diet is meat, milk and bread. We have found that the anemia which occurs in these animals can be controlled by cod liver oil by mouth, and iron subcutaneously. We tried liver, both raw and cooked, in 1924, when we first discovered the anemia in these animals, but it caused such a severe diarrhea within two or three days that we had to discontinue it. We have not tried liver extract. The anemia that occurs in these animals is not like pernicious anemia in man. I should like to point out, however, that the dog may be so biologically constituted that he will not develop the disease as man develops it.

DR. GEORGE H. WHIPPLE, Rochester, N. Y.: About ten years ago, when we first reported the work here in Minnesota on the favorable effects of diet, Dr. Hooper, who was associated with me then, made an alcoholic extract of liver and got permission from the medical clinic to use it in several cases. In two of those cases there was remission. Dr. Hooper received so many amused and critical comments from the medical staff

that he discontinued the work, much to our regret. That shows that clinicians at times should not be too unreceptive to what may seem like the crazy notions of the experimenters. As to the question of whether dogs develop pernicious anemia, I cannot give an answer as yet. They do develop aplastic anemia. We have one animal, which we have had for about three years, that has developed aplastic anemia. I presume as we continue that a number of other interesting abnormalities may appear. Dr. Berglund raised a question as to change in the hemoglobin saturation in red cells in secondary anemia. In animals we can change saturation by suitable diet. Most cases of secondary anemia in human beings are complicated, and, of course, they are vastly more difficult to handle and study. We have made some observations on feeding the stroma of red cells in secondary anemia which are puzzling and have promise of interest. Dr. McCann has made some observations in pernicious anemia with ash of liver and has shown that there was a preliminary rise in reticulocytes, but that it faded after two or three weeks. Something which has the well known effect of the liver extract is present in the ash of liver, but the whole liver effect is not present. This and other evidence favor the idea of multiple factors rather than a single liver factor in anemia therapy.

DR. E. H. HEATH, JR., Baltimore: I wish to report, in a preliminary manner, five cases of pernicious anemia presenting marked symptoms and signs of central nervous disorders. Of these five patients, two received liver extract, three received liver diet, and one of each group showed rather unexpected improvement. However, careful neurologic examinations before and after treatment showed little objective change. We felt that the improvement noted was explained by reeducational measures plus a gain in strength rather than by any change in the spinal cord lesion. Of course, after sclerosis of the spinal cord has once occurred, liver or any other sort of treatment can hardly be expected to repair the injury. On the other hand, there exists an impression that a discrepancy exists between the pathologic conditions found in these individuals and the signs and symptoms noted. It seems possible, therefore, that in a few cases we might obtain rather surprising improvement, particularly if liver was fed during the active stages of the sclerosing process. With this idea in mind, we have advised all these patients to adhere strictly to their diet. I might also say that it is in this type of case that we strongly advise the use of hydrochloric acid in line with Hurst's view of the relationship between the achylia and the disease.

DR. WILLIAM S. MIDDLETON, Madison, Wis.: I want to take this opportunity to bring to the section the work that is being done by Drs. Hart and Steenbock at the University of Wisconsin. I want particularly to stress the tremendous conservatism that has attended this work. At no time has Dr. Hart asserted that he could transpose his results with rats to other animals, let alone human beings. As a matter of fact, some of the results that he has obtained show that the rabbit is not as responsive to the copper plus iron as is the rat. Now we have followed this work up on the clinical side, not only in the isolated cases of pernicious anemia which I reported this morning, but also in cases of secondary anemia. We have thirteen or fourteen cases which have been under observation with quantities of iron inadequate, in our judgment, to treat the anemia properly but supplemented by copper. This plan has not effected improvement in a single instance. These, of course, are very early reports, and it is our intention to extend them particularly by increasing the amount of available iron in the hope that we may effect a change in hemoglobin.

DR. JAMES H. MEANS, Boston: Dr. Isaacs brought up the matter of the diameter of red cells in a normal person in different localities. I do not have any knowledge of what the geograhic effect would be. We have been interested in plotting the distribution curve of red cell diameter in Boston and we have a considerable number of curves on normal persons. If the cells are smaller in Ann Arbor, I think that Dr. Isaacs ought to accumulate as many data as possible. I am not sure that it is a real phenomenon of nature; I am wondering whether it is not due to a difference in technic. We have never, so far as I can recall, had a diameter as low as 6.5 microns in any one whom we would call normal. One realizes that it is entirely possible of course that geography might make a difference in the size of red cells just as in physiologic factors.

TOTAL CONGENITAL COLOR BLINDNESS

ITS GENERAL MEDICAL ASPECTS, WITH REPORT OF THREE CASES *

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It is odd that total color blindness, a subject of such elementary importance to so many branches of medicine, physiologic optics, neurology, psychology, heredity and the like, has been almost overlooked in this country. Bell's [1] exhaustive bibliography, issued two years ago, cites only one report [2] from this continent out of the 119 cases recorded.[3] One factor doubtless is that the name total color blindness in no way suggests the interest of this subject, nor is it at all adequate in describing its nature. Clearly, the color defect is only a small part of this affliction, yet the popular textbooks fail to portray it as anything other than a combination of the regular forms of color blindness.

For a clear understanding of the subject, this distinction should be made plain at the outset. The other varieties of impaired color perception, the ones continually run across in practice, cause so little disturbance that their victims are often unconscious of any difference from the normal. The commonest is the familiar red-green blindness, which is attributed to absent or impaired recognition either of red or of green. Hering's explanation of such congenital color defects assumes the existence of a perceptive substance in the retina, divided into three parts: one responding to the complementary colors red and green, the second to blue and yellow, and the third to white and black. Disturbance in the metabolism of the red-green substance accounts for ordinary color blindness. Impaired blue-yellow perception is much rarer. This is the same disorder described by the followers of Young and Helmholtz as violet blindness. Subjects of common color blindness describe their vision as being much like that of normal persons wearing tinted lenses, which screen out or alter certain shades. Now, totally color blind subjects do not see at all as the rest of us would if the only change in our surroundings were removal of color. Theirs is not a colorless world such as we see in a photograph or etching viewed by daylight. Rather the lack of color is the same as in objects seen by the normal person at twilight—quite a different thing.

We know only imperfectly the change that takes place in the normal human eye by which it sees at dusk, though it is literally an everyday experience. On leaving daylight and entering a dim room, we are at first unable to make out anything. Soon something happens to the eye that makes objects dimly visible. The eye has become adapted to seeing in the dark. It is called "dark adapted." This newly acquired twilight, or so-called skotopic vision, recognizes the form of objects in the dusk but not their color. All this is common knowledge. Another characteristic of this vision, however, seems so strange that laymen are a little skeptical about it and many physicians are unaware

* Read before the Section on Ophthalmology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Bell: Eugenics Lab. Mem. Univ. Lond. XXIII **2**, pt. II, p. 163, 1926.

2. Colburn: Am. J. Ophth. **14**: 237, 1897. Since this was written, a case has been reported by Bennett: Am. J. Ophth., April, 1928, p. 302.

3. Since this writing comes a report by Bennett: Am. J. Ophth. **11**: 302, 1928.

of it, although it has been known for years. This is the marked loss of central vision. By day if we catch a glimpse of an object to one side we can, by looking directly at it, see it much more clearly. At twilight, on the contrary, it becomes still less distinct to the direct gaze. In a word, all vision has been reduced by darkness and color perception has disappeared, but in addition something still further has happened at the macula. This we know because, on looking slightly eccentrically so that the image falls just outside the fovea centralis, objects look plainer. Stars, for example, can be seen obliquely that are not distinguishable by direct vision. When one returns to daylight, this process is reversed. The sudden glare of the light blinds the person emerging from darkness as much as he was previously blinded by the darkness. Soon, however, his eye becomes adapted to seeing in the light, and acquires light adaptation, photopic vision, or whatever name is preferred to describe the ordinary condition during the day. Not so the totally color blind. They describe all the phenomena of twilight vision. They have the same indistinctness of central vision, the same perception of form without color, and the same blindness from a sudden glare. The difference is that with them this condition is permanent.[4] Their mechanism for adapting their vision to light does not function. As Dr. Lancaster puts it, "They see like persons in the dark." Thus the following cases become easier to understand if considered in terms of permanent dark adaptation.

REPORT OF CASES

CASE 1.—*History.*—A woman, aged 37, seen, Oct. 21, 1926, because of sensitiveness to outdoor light and poor distant vision, stated that she could not distinguish colors, and that in childhood her mother described her eyes as in constant motion. They were now quiet except in brilliant light or when straining to see.

Heredity.—She and two sisters similarly affected were first, sixth and seventh of a family of eleven. The other brothers and sisters were normal. Their father was the only normal one of four brothers. In the other three brothers the eyes were affected in youth, according to the family, as a result of measles. One examined showed advanced pigmentary degeneration of the retina, with normal color perception. The patient had one daughter of high school age with normal eyes.

Central Vision.—Under homatropine the refraction was: R. $-1.75 -2.00 \times 180$; L. $-4.75 -2.50 \times 180$, with which each eye sees 8/135.

Field of Vision.—The form field was normal. The blind spot was uncertain. Color vision was wanting.

Fundus.—In both eyes, the disk was normal except for a moderate myopic crescent. The retina was slightly thin.

CASE 2, a woman, aged 24, and CASE 3, a woman, aged 22, presented defects similar to those in case 1 except for refraction and vision, which were, respectively: R. -6.00; L. $-8.00 -0.75 \times 0$, and R. $-2.50 +4.00 \times 85$; L. $-3.75 +4.50 \times 80$, with which vision is 20/200. The fundus was normal in both.

PHOTOPHOBIA

Glare blindness was in my patients the peculiarity first to attract notice. It is referred to in the books as "photophobia," an unfortunate name, since it diverts attention from the pathognomonic character of the symptom. "Dazzling" comes nearer to the sensation my patients describe. They do not mention any such discomfort as is felt when light strikes inflamed eyes. Instead, they complain of annoyance by daylight, such as we all feel at night when facing the impenetrable glare of motor headlights. This difference is fundamental and becomes intelligible the moment the condition is considered as defective light adaptation. The glare blindness is then the same phenomenon experienced by every one while becoming light adapted and is not simply a stigma associated with lack of color sense. The presence of light blindness in a subject with poor central vision should recall at once this condition of complete lack of light adaptation and color perception.

DUPLICITY THEORY

These defects are such as would follow lack of function of the cones in the retina, provided these elements perform the offices ascribed by the duplicity theory of von Kries.[5] Cones are the only percipient elements found at the fovea, where vision is keenest, and they gradually disappear toward the periphery, where color perception fades. Hence in accord with their anatomic distribution this theory regards them as the seat of clear daylight vision and of color sensation. With the understanding that I am not supporting this hypothesis, I cannot refrain from pointing out how cleverly it elucidates these phenomena both as described by these patients and as experienced at dusk in normal dark adaptation. According to this doctrine, the loss of color sense and central acuteness in total color blindness results from abeyant cone vision. Rods are distributed from the fovea to the periphery of the retina. Peripheral form perception and dark adaptation are then an attribute of the rods, accounting for the twilight vision and light blindness. Though ignored by popular textbooks, this theory is still the working hypothesis of physicists. Accordingly, they designate both total color blindness and normal dark vision as "rod vision."

PROOF OF ACHROMATOPSIA

There is evidence that anomalous conditions occur intermediate between total and partial color blindness. Some such patients have believed themselves totally color blind. As they have no understanding of colors, their statements are obviously unreliable. The routine color tests which have been tried on them are notoriously fallacious. It is thus difficult to prove that the achromatic eye is totally unable to discriminate between colors. Bell [1] says that she cannot cite a single case in which any two different colors, ascertained to have the same luminosity value, have been stated to be absolutely undifferentiated.

My patients said that the only difference they could see in colors was that some were lighter, others darker. From similar statements it has been assumed that such persons see in various shades of gray. Parsons calls this vision "monochromatic." The term is somewhat indefinite, however. For instance, Abney [6] so classified a patient whose luminosity curves suggested that he had green vision.[7] Landoldt [4] and others favor the name "achromatic."

To enable me to obtain more exact evidence, Mr. Irwin G. Priest, chief of the Colorimetry Division of the Bureau of Standards, suggested the use of Marten's photometer, which he kindly secured for me. This instrument shows to the observer a white or a gray disk, divided vertically in half. Each half is illuminated from a separate light source, and the intensity

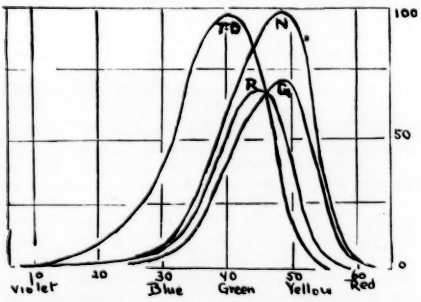
4. Landolt: Arch. d'opht. **1**: 114, 1881.

5. Von Kries, cited by Parsons: Introduction to the Study of Color Vision, Cambridge, 1915, p. 203.

6. Abney: Researches in Colour Vision, London, 1913, p. 359.

7. Compare Moeller: Violet Vision in Dark Adaptation, Klin. Monatsbl. f. Augenh. **78**: 220.

of each can be varied independently simply by turning a screw. Thus it is possible to match the illumination of the two halves so exactly that the dividing line between them actually disappears, leaving a complete homogeneously lighted circle. The advantage of this apparatus over Köllner's [8] modification of Nagel's lantern is obvious. The lantern has two openings, the intensity of illumination of which is similarly subject to independent control. The separation between the openings, however, introduces a factor of error in matching the lights. With the photometer, if the observer is truly devoid of color perception, so that



Luminosity curves (after Abney) as found in: *T-D*, total color blindness and normal dark adaptation; *N*, normal daylight vision; *R*, red blindness, and *G*, green blindness.

colors are distinguished only as tones of gray, an equally exact matching of such grays should be possible, though the semicircles are colored contrastingly. He can make a perfect match not only with a white or gray disk but also with one in which one half is any color, say red, and the other any other color, say green or blue, simply by adjusting the brightness of illumination of the two halves.

This turned out to be the case. My first patient could match the fundamental colors (Hering) red, green, blue and yellow, with each other so perfectly that she saw no division between them, and the entire disk appeared to her in one homogeneous tone. Normal observers would still see the circle in two opposing shades, no matter how the illumination was changed, unless it was reduced below the color threshold to twilight vision.

The routine color tests had not given any such striking demonstration of the color defect in this patient. It is even conceivable that a perfunctory examination with them might have completely failed to disclose it. With Holmgren's wools, for example, she matched the complete green series, barring one skein. In an industrial examination, a hurried practitioner might easily have been satisfied with the test at this point and passed the applicant. The rose-pink and blue series, on the contrary, at once exposed her color defect. Her first match for the blue skein was the complementary color yellow.

She was also able to decipher fully half of the designs in Stilling's pseudo-isochromatic plates. Her ability to do this is explained by her luminosity curve. At one time it was possible to have her select the brightest part of a large number of solar spectrums. Invariably she pointed to the green as the place of greatest brilliance. Luminosity curves are obtained by having the subjects compare the brilliance of the different colors in the spectrum with other colors or grays of a known luminosity and plotting the resultant indexes. In this way each type of color defect is found to show a constant variation from the luminosity curve of normal persons. It has long been known that the luminosity curves for patients with total color blindness are strikingly similar to those of normal subjects with dark adapted vision.[9] In both cases the spectrum is also shortened at the red end. Light adapted normal persons, on the contrary, pick yellow as the most luminous part of the spectrum. Thus the statement of my patient that in matching the green skein she simply chose the brightest wools is doubtless correct. So, in deciphering many of Stilling's figures, this change in luminosity made for her a contrast between the design and its background, whereas for certain partially color blind persons there would have been only one homogeneous shade.[10]

NYSTAGMUS

As is often the case, my first patient gives a history of early nystagmus. This symptom is unquestionably more common in young patients. An analogy to the nystagmus developing in miners, much of whose work is carried on under conditions of dark adaptation, has been remarked. From a clinical standpoint, the importance of routine investigation of the color perception in young subjects with nystagmus must be evident.

HEREDITY

Schiötz [11] has shown that the inheritance of ordinary color defects is identical with a sex-linked mendelian recessive trait. The nature of the transmission of total color blindness has not been revealed with any such certainty. As in my cases, the tendency has usually been found in families. It has also rarely been found by other observers to accompany pigmentary degeneration of the retina,[12] but in the same patients, and not as here in different children of the same family. It is hard to find any good reason for this occurrence, as the two anomalies are diametrical opposites. The incompatibility shows strikingly in the accompanying table.

Contrast Between Achromatopsia and Pigmentary Degeneration

	Total Color Blindness	Pigmentary Degeneration
Response to illumination	Day blind	Night blind
Peripheral fields	Unimpaired	Concentric contraction
Central vision	Defective (often central scotoma)	Preserved till late
Color perception	Entirely absent	Unaffected till last stages
Nystagmus	Frequent	Rare
Onset	Congenital	Childhood or youth
Course	Complete at onset	Slowly progressive

According to Collins,[13] retinitis pigmentosa is an abiotrophy beginning with atrophy of the rods and cones at the 10 to 15 degree perimeter circles. This is the very region where, in the totally color blind, the

8. Köllner: Disturbance of the Color Sense, Leipzig, 1912, p. 81.

9. Hering: Arch. f. d. ges. Physiol. **49:** 563-608, 1891.
10. Ladd-Franklin: Nature **48:** 517, 1923.
11. Schiötz: Klin. Monatsbl. f. Augenh. **68:** 498, 1922.
12. Nettleship: St. Thomas's Hosp. Rep., London **10:** 37-48, 1880.
13. Collins: Tr. Internat. Ophth. Cong., Washington, D. C., 1922, p. 117.

vision is keenest. I found some references ascribing total color blindness to absence of cones. This assumption, however, is unnecessary and most writers believe that cones are present but not working.[14]

Evidence regarding the heredity of total color blindness is inadequate. The color blind patients reported here are children of a normal father whose three brothers are victims of pigmentary degeneration. Is it possible that the color defect is in this instance in some obscure way a hereditary alternative for the pigmentary degeneration?

CLINICAL ASPECT

Nothing, of course, can be done for the color defect. The impaired central vision likewise is usually dismissed by the books with the statement that it is seldom improved by lenses. Nevertheless, I never had patients more grateful for the slight relief that glasses can afford.

Because these subjects are dark adapted they receive benefit by the cutting down of light with lenses perceptibly shaded. Although including their rather high correction does not seem to bring out any smaller letters on the test cards, nevertheless carefully fitted lenses appear to increase the efficiency with which they work. For example, my first patient is able with her glasses to thread a needle and do some sewing. She has her family tell her the colors of thread and remembers them by their brightness and by their place in her work box. In a similar way, she and her sisters have been able to work at painting leather in a shoe factory. This occupation seems an extraordinary choice for the totally color blind, yet they carried it on without a mistake. Actually it is but little more difficult than for a red-green blind navigator or engineer to distinguish red signals from green by their luminosity, as has often happened.

SUMMARY

Total color blindness is characterized by complete absence of color perception, light blindness, and impaired central vision, often accompanied by nystagmus. The luminosity curve shows the brilliant part of the spectrum in the green, with shortening at the red end. It is obviously more than merely an extreme or composite manifestation of the usual types of color blindness.

Since the same phenomena appear during normal dark vision, this anomaly seems quite like a condition of permanent dark adaptation. It differs from the normal in having no threshold either for colors or for central vision, and entirely lacks the power of light adaptation.

The duplicity theory explains this anomaly as an abeyance of the function of the cones. Hence physicists designate it as "rod vision."

While nothing can be done to change the underlying abnormalities, these patients gain in comfort and efficiency from shaded lenses carrying their correction.

To obtain material for further study requires the investigation of color perception in young subjects with nystagmus and in all persons manifesting day blindness and amblyopia. As in all types of color blindness, there is great need of material for microscopic examination, which, as Bell points out, should include not only the globe but, when possible, the nerves and brain.

704 Congress Street.

14. Cf. Larsen: Verh. d. Ophth. Gesellsch., August, 1921.

ABSTRACT OF DISCUSSION

DR. BURTON CHANCE, Philadelphia: No true color sensation is experienced by those with this anomaly, and to them the spectrum appears as a colorless band, the various parts differing only in their luminosity. The brightness degrees have been comparable to those obtained by persons with normal sight under conditions of dark adaptation. There have been two types of color blind persons: those whose greatest brightness has been found in the yellow region of the spectrum, just as in persons with normal sight, and those for whom greens have been the brightest, in the same manner as has been noted in scotopia. It is admitted by careful observers that foveal vision is certainly defective; in consequence, such a defect would cause blindness for color and for light. While most reports state that there was central scotoma, examinations are difficult and the results are accordingly uncertain owing to the nystagmus. The subjects are commonly painfully dazzled by bright light and few can bear ordinary light; yet most have been able to see fairly accurately in dim light. Ladd-Franklin would explain certain of the published cases somewhat as follows: (1) At the fovea there are rods which lack visual purple; or (2) there are undeveloped cones at the fovea which are incapable of arousing color sensations although they contain the same photochemical substance as the rods; (3) in others there are no visual elements in the fovea capable of performing any function. Accordingly, in achromatopsia there are two classes. In the first, because of defectiveness of the cones, there are nystagmus, photophobia or glare blindness, and foveal blindness; and in the second, in which there are none of these symptoms, because of some difficulty in the nervous condition, color is not perceived. Along with the achromia is a lowered visual acuteness out of all proportion to the degree of ametropia present. Without doubt, the dread of light depends on the lack of pigment; it is probably not true photophobia. I have not found achromatopsia in normal fundi, but, notably, in those with signs of retinal degeneration, and I look on the condition as a reversion to primitive states. The peripheral zones of the human retina are distinctly monochromatic. It would be interesting to know what the pupillary reactions of Dr. Beach's patients might be when they are subjected to the stimuli of the various colors, with comparisons made as to the speed of dilatation and contraction in light, white and colored, and in darkness, in normal persons and in those with protanopia and deuteranopia. I have found it extremely difficult to make a satisfactory study of the color sense of private patients who have been aware that their color appreciations have been different from those of others.

DR. EDMOND E. BLAAUW, Buffalo: Hess states that in several cases, examined with E. Hering, he could with certainty exclude the presence of a central scotoma. He had found later some characteristics of the foveal elements in normal eyes which were also present in total color blind persons. Hess considered, therefore, the total color blindness a remaining on a lower stage of development, which is found in the vertebrates only among the fishes. The subject can also be approached from another angle. There seems to be some confusion between color blindness, as usually spoken of, and total color blindness. The heredity in the two conditions is not the same. Daltonismus is propagated, as a rule, through the female as conductor to the male; the proportion of males to females is variously quoted as from 7 to 10 per cent of the male population, hardly 1 per cent of the female; in round numbers one red-green abnormal female to ten red-green abnormal men. In total color blindness the number of women to men is as 73 to 100; 1:300,000 of the population; involvement of the two sexes found in the same family. It never appears in two successive generations. The defect or injury is probably localized in the x-chromosome of the mother or father or both the parents.

DR. ALLEN GREENWOOD, Boston: I did not realize until Dr. Chance spoke how rare these cases are, and it might be interesting to Dr. Beach to know that I have in the town of Belmont, Mass., two sisters who have always known that they were "day-blind," as they call it. I was able to give them immense relief by correcting their astigmatism and having them use very dark glasses. They are handicapped greatly by the condition for they cannot step into a brightly lighted room, even with the dark glasses, and go about comfortably.

DR. S. JUDD BEACH, Portland, Maine: I am very grateful to the gentlemen who have added interest to this paper by their discussion. We are certain of little about these totally color blind patients. The nature of their vision is disputed. One school believes that they have violet vision. What we need is more material and more data, in order to judge of the nature and transmission of this anomaly.

EXPERIMENTAL CREEPING ERUPTION FROM A CAT AND DOG HOOKWORM (A. BRAZILIENSE)*

BEDFORD SHELMIRE, M.D.
DALLAS, TEXAS

Until two years ago it was generally conceded that creeping eruption was due to the wanderings of a botfly larva within the human skin. In rarer instances, creeping diseases were known to be due to like migrations of pig nematodes and to larvae of the cattle "heel fly." These causative agents, however, did not explain the great number of cases of creeping eruption encountered in the Atlantic and Gulf states. After a perusal of the literature of this section, one is impressed with the fact that contact with sand is frequently mentioned in the histories of patients with this cutaneous condition. Whatever the etiology of creeping eruption, bodily contact with damp earth plays a most important rôle. The dermatologists of our southern coastal region, many of whom have seen hundreds of cases of this disease, have long believed that this medium would some day be proved the temporary or permanent home of the etiologic agent in the majority of cases of creeping eruption.

Kirby-Smith, Dove and White,[1] while studying a high incidence of creeping eruption in Florida, were able to demonstrate a nematode larva in serial sections of the skin of patients suffering from this disease. Pending the discovery of the adult worm of the species, they provisionally gave this larva the name *Agamonematodum migrans*. More recently White and Dove[2] have identified this parasite as the third stage larva of a "cat and dog" hookworm, *Ancylostoma braziliense*. By an application of pure cultures of such larvae to the unbroken human skin, these authors were able to obtain penetrations which produced symptoms and typical linear lesions of creeping eruption.

In retrospect, the problem seems a simple one. A cat or a dog harboring an intestinal hookworm infection of *A. braziliense* contaminates, through defecation, the sand box of a child or a sandy beach frequented by adults. The hookworm eggs deposited with the excreta give rise to actively migrating second stage larval forms of the hookworm. On coming in contact with human skin, these larvae, losing their chitinous sheath, penetrate the epidermis of the host. Their migrations within the human skin give rise to the linear, tortuous, progressing lesions characteristic of creeping eruption.

The purpose of the experiment subsequently outlined was to corroborate or disprove the results of White and Dove. Both clinical and experimental evidence are in accord with their observations.

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* Read before the Section on Dermatology and Syphilology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Kirby-Smith, J. L.; Dove, W. E., and White, G. F.: Creeping Eruption, Arch. Dermat. & Syph. **13**: 137 (Feb.) 1926.

2. White, G. F., and Dove, W. E.: Concerning the Causation of Creeping Eruption, J. A. M. A. **90**: 1701 (May 26) 1928.

CLINICAL EVIDENCE IN SUPPORT OF THEORY

Before the recovery of nematode larvae from the skin, Kirby-Smith [1] expressed the view that at least 50 per cent of the patients with this disease seen by him (2,500 in fifteen years) were believed to have contracted the infection at the beach, "the probable origin being traced to the soft, damp sand in front of beach buildings at points slightly above the high tide water mark. Persons with hundreds of lesions definitely attributed the origin of their infection to contact with damp sand when they were wet with perspiration while working under automobiles, doing brick work or making plumbing connections underneath houses." Physicians in the eastern portion of America, who from time to time have observed sporadic cases of creeping eruption, mention in their case reports the history of contact with sand or earth. All of Stellwagon's [3] patients gave such a history. Similar bodily contacts were noted by Gaskill,[4] Whitehouse,[5] Klauder and Greenbaum,[6] and others. From more than a hundred patients with creeping eruption viewed in my office, a definite history of contact with moist earth or sand was obtainable in most instances. By far the greater number of cases in my practice have occurred in children playing in sand piles. Picnicking or bathing at a sandy beach, wading in creeks, digging in flower beds or making plumbing connections were other apparent modes of infection.

Four extensive cases were traced to a single bed of sand. A nurseryman presenting several hundred linear lesions of this disease was seen during the past summer. On a Monday morning he had started transplanting small shrubs in a propagating bed. His work was such that his left arm and left leg were in almost constant contact with the damp sand in this bed. By 4 o'clock that afternoon such severe stinging was experienced in the left upper and lower extremities that work was discontinued. These members seemed to be studded with "bull-nettles." On the next morning work was again resumed but was discontinued on the fourth day because of the severity of the skin symptoms. At this time his left arm and leg were "so covered with stinging pimples that he could not work." When seen in my office two weeks later, the patient presented an extensive creeping eruption confined to these areas. A helper who took the patient's place at the propagating bed likewise immediately developed an extensive creeping eruption. Two children who played in this bed while their father was at work presented similar migrating lesions.

The sand in this small bed had not been changed in four years. The two adults had planted cuttings and shrubs in the bed on numerous occasions during this period, yet had never experienced lesions simulating creeping eruption. As the bed of sand had become suddenly heavily infected with the causative agent of this skin disease, I traveled to the patient's home, about 125 miles distant from Dallas, accompanied by Mr. W. E. Dove, to trace the possible mode of infection of these patients.

At an isolated nursery, a greenhouse containing two small propagating beds was found. Four cats from the premises were known to frequent the beds of this building for defecation. These cats were brought back to

3. Stellwagon, H. W.: A Case of Creeping Eruption, J. Cutan. Dis. **21**: 502, 1903; **22**: 359, 1904.

4. Gaskill, H. R.: Larva Migrans, J. Cutan. Dis. **35**: 105, 1917.

5. Whitehouse: Larva Migrans, J. Cutan. Dis. **35**: 187, 1917.

6. Klauder, J. V., and Greenbaum, S. S.: Creeping Eruption (Larva Migrans), Arch. Dermat. & Syph. **3**: 377 (April) 1921.

Dallas, and cultures were taken from specimens of their stools by Mr. Dove. At the autopsy of two of the animals, adult hookworms were recovered and were identified as *Ancylostoma braziliense* and *A. caninum*. As Dove and White [2] have shown that *A. caninum* does not produce the linear lesions of creeping eruption, it was presumed that the *A. braziliense* harbored by the two infected cats was the cause of the cutaneous eruption in the four patients. These infected cats had deposited, in the sand of the propagating bed, feces containing eggs of *A. braziliense*, one of the common cat and dog hookworms. As a result of the warmth and moisture of this bed, the hookworm eggs hatched, producing actively migrating larvae. These larvae, on coming in contact with the skin of the four persons who worked in the bed, penetrated the epidermis. Further migrations of the larvae caused typical linear lesions on the cutaneous surface of the patients.

EXPERIMENTAL EVIDENCE IN SUPPORT OF THEORY

Method of Obtaining Larvae.—In order to obtain these hookworm larvae in pure culture and in sufficient number for experimental purposes, White's [7] culture method was used. A kitten that had not shown any evidence of previous hookworm infection by culture was fed one adult female cat and dog hookworm *A. braziliense*. In a few days the worm established itself in the intestine, as evidenced by the appearance of hookworm eggs in the stools of the animal. A watery suspension of a stool containing these eggs was then made. Sterile granulated charcoal was added to this suspension until the resulting mixture had the consistency of damp sand. This charcoal-feces mixture was then placed in an uncovered petri dish, which was in turn placed in a crystallizing dish about 6 inches in diameter. The space intervening between the sides of the two dishes was filled with sterile distilled water to a depth of 0.5 cm., which resulted in a moat of water about the culture. In order to prevent excessive evaporation and to provide a moist chamber, the crystallizing dish was covered with a large watch glass. The hookworm eggs contained in the charcoal-feces mixture furnished second stage or infective larvae in from seven to ten days. Such larvae in the charcoal mixture migrated into the surrounding moat of water. From this water, larvae were then collected with a pipet for experimental human inoculation.

The larvae consisted of a pure culture of *Ancylostoma braziliense*. They were the progeny of a single female worm and were obtained from a single culture of the stool of the cat which harbored this worm. With larvae of the same parentage and of equal ages, we were interested in learning whether they would produce lesions on the human skin and whether these lesions would show variations.

Application of Larvae to the Human Skin.—In order to simulate conditions under which infections occur in nature, the room where the experiments were conducted was heated with a stove to midsummer temperature. Infective larvae of *Ancylostoma braziliense* were then applied to the arms of eighteen volunteers. In all instances the same procedure was followed. One drop of watery suspension containing about 100 larvae in pure culture was applied to the unbroken skin of the flexor surface of the forearm of each volunteer. Granulated charcoal was then added to this drop of water containing larvae until the resultant mixture had the consistency of damp sand. This mixture was allowed to remain on the arm for from ten to twenty-five minutes before being washed with soap and water. Typical creeping eruption was subsequently noted in sixteen of the eighteen volunteers. No evidence of such a condition was noted in two of the volunteers. In all, approximately 100 linear lesions were produced from penetrations of the larvae. Third and fourth year medical students were used as volunteers. The provoked exanthems were observed daily, and variations were recorded.

Immediate Lesions.—In several of the volunteers no lesion could be seen on the forearm immediately following removal of the larvae-charcoal mixture. In others pin-head erythematous macules and urticarial papules developed at the sites of penetration of the larvae. One

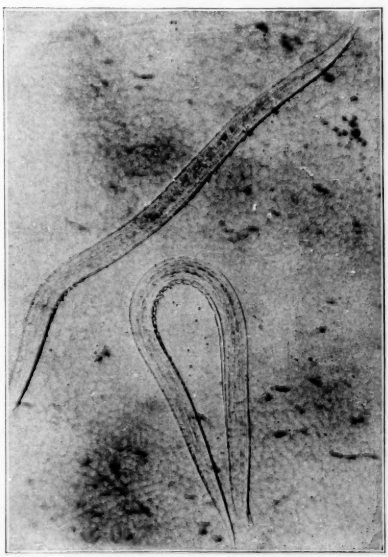

Fig. 1.—Ancylostoma braziliense larvae used for experimental inoculation; high power magnification. Actual measurements, 20 by 570 microns.

or the two types of lesions were noted in the same individual. These immediate lesions, often accompanied by a stinging pain at the time of penetration of the larvae, were evanescent in character, as the arms of all the volunteers appeared perfectly normal a few hours later. Within from twenty-four to seventy-two hours definite pruritic, shotty erythematous papules from 2 to 5 mm. in diameter reappeared at the sites of penetration of the parasites. In uncomplicated cases, linear migratory lesions started from these papules about the fourth day. In one uncomplicated case, migration of the parasite was delayed two weeks. Microtome sections of one of the excised papules in this case revealed the larva in situ (fig. 6). Later in the disease, shotty, infiltrated papules marked the sites of rest of the larvae. In two instances the effects of fever delayed migrations of the parasites.

7. White, G. F.: A Method of Obtaining Infective Nematode Larvae from Cultures, Science **66**: 302-303 (Sept. 30) 1927.

Linear Lesions.—After the fourth day, definite linear lesions were encountered. These were either erythematous, slightly elevated tortuous lines, edematous linear elevations slightly paler than the surrounding skin, or frankly vesicular burrows elevated 2 mm. or more. The migrations of a parasite could often be palpated 1 cm. or more in advance of the visible progressing end of the burrow. Migrations of the larvae occurred chiefly at night but could usually be brought on at will by holding the arm before a fire or soaking it in warm water. When migrating, the larvae moves from ½ to 1 inch in the twenty-four hour period. Extreme migrations of from 2 to 2¾ inches in a twenty-four hour period were occasionally observed. The progress of the parasite was not constant, a rest period of from several days to a week often being alternated with a period of activity. A definite infiltrated shotty papule from 2 to 6 mm. in diameter would mark the sites of rest of the organism. When its invasion was renewed, serpentine lines would mark the path. The larvae traveled a very circuitous route in the skin, crossing and recrossing the old path many times. For this reason, a parasite was rarely more than 6 or 8 inches from the original site of penetration. Maximum migrations of 12 inches in fourteen days, 15 inches in twenty-one days and 25 inches in nineteen days were noted. The larva traveling this extreme distance of 25 inches was only nine inches from the original point of penetration if measured in a straight line. The tendency of larvae to retrace the old burrow was encountered in two instances (students 1 and 2). In these cases the invader seemed to turn in its burrow and retrace the old lesion for a short distance before turning to form a new tunnel. In such instances the old burrow would end blindly, while half an inch or more from the blind termination a line would branch to form a new trail. Branching of linear lesions of a creeping disease was noted by Tamura [8] in his case of gnathostomiasis.

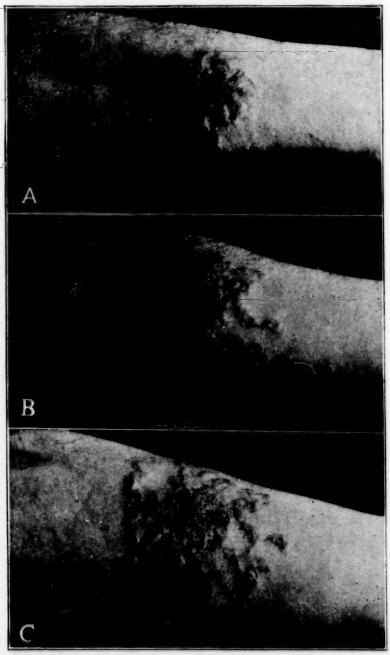

Fig. 2.—Author's arm: erythematous, slightly elevated tortuous lines after *A*, six days; *B*, ten days, and *C*, fourteen days.

Subjective Symptoms.—A stinging sensation of one or two minutes' duration was felt at the time of the penetration of the larvae. The penetrations did not all cause this sensation, as several volunteers who reported feeling only one penetration later developed half a dozen or more migrating lesions. The early papules present from the second to the fourth day were extremely pruritic, causing marked excoriations of the inoculated area. When the migrations of the larvae once began, the pruritus was replaced by an intense stinging, burrowing pain, resembling the bites of myriads of small insects. The subjective symptoms were usually worse at night, being directly proportionate to the extent of migrations of the larvae. Sleep was prevented, the volunteers securing only a few hours of interrupted rest each night. As a result of this distressing symptom, many of the volunteers froze their lesions before good photographs could be obtained.

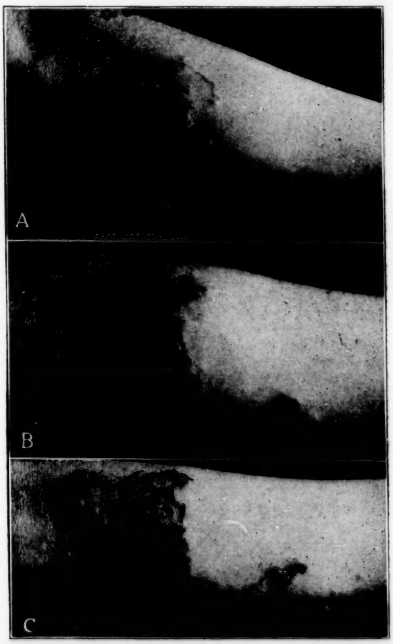

Fig. 3 (student 1).—Migrations of larvae delayed by fever. Appearance after *A*, fourteen days; *B*, twenty-one days; *C*, twenty-eight days.

8. Tamura, H.: On Creeping Disease, Brit. J. Dermat. & Syph. **33**: 81 (March) 1921.

Effects of Fever.—Fever seems to have a definite healing influence on creeping eruption. Several days after the inoculation of the larvae two of the volunteers contracted influenza, a disease prevalent among the students at that time. One volunteer developed this condition three days after the application of the larvae to his forearm. Papular lesions present at this

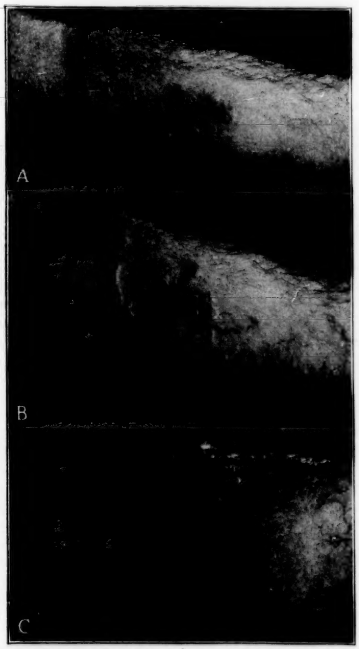

Fig. 4 (student 2).—Burrows frankly vesicular; note branching. Appearance after *A*, six days; *B*, ten days; *C*, fourteen days, showing extension from flexor to medial surface of arm.

time immediately disappeared. These lesions reappeared on the eighth day and migrations occurred on the tenth day. In another student, migratory lesions disappeared on the sixth day (second day of influenza) but reappeared on the twelfth day. From this it seems that protein shock may definitely influence healing in spontaneously acquired cases of creeping eruption.

Spontaneous Healing.—One volunteer who developed papular lesions at the site of inoculation on the third day experienced complete healing of the lesions without treatment by the seventh day. A second student developed a linear erythematous line 1 inch in length. This disappeared without treatment by the fourteenth day. In student 1, the eruption was allowed to progress untreated. Complete healing without treatment resulted during the ninth week. Two untreated lesions on my own arm progressed to the fifty-second and ninety-second day. Insufficiently frozen larvae in two other students (figs. 5 and 7) progressed at intervals for ten and eleven weeks, respectively. White and Dove [2] have found that larvae of this type remain in the skin for three months unless treatment is instituted; in other instances, spontaneous healing resulted after several weeks. In my own eperimental cases, as in spontaneous creeping eruption, refractoriness to treatment was striking, migrations of the larvae occurring after repeated freezing with ethyl chloride (thirty seconds) and fumigations with ethyl acetate. Many of the failures with ethyl chloride were probably due to the inaccurate determination of the location of the parasite. Many untreated larvae were apparently removed from their burrows by inadvertent scratching.

In connection with the production of a creeping disease experimentally, Fülleborn [9] was able to obtain advancing linear lesions in his own skin through the application of larvae of *Uncinaria stenocephala*, another hookworm occurring in dogs in Germany. The migrations of these larvae were very limited, the eruption disappearing spontaneously within a few days. In contrast to this, advancing lesions in the cases reported here were most active during the third week. Subjective symptoms were of such severity at this time that in most cases treatment was instituted.

Blood.—Total and differential white blood cell counts on the volunteers were essentially normal except for a definite increase in the number of eosinophils. A total of thirty-three counts at the height of the cutaneous eruption showed an average total leukocyte count of 8,700 cells and an average eosinophilia of 4.8 per cent. Extremes varied from no eosinophils in student 4 (three counts of 100 cells each) to 8 per cent eosinophils in student 5 and 9 per cent in student 6.

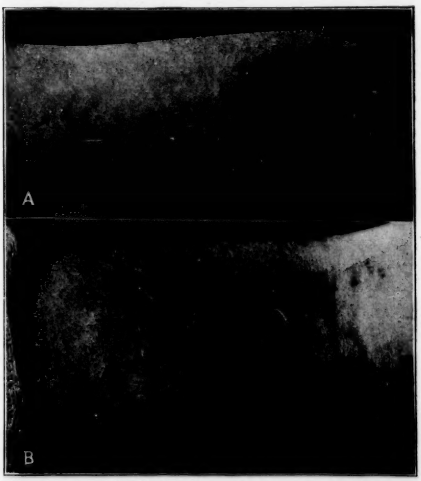

Fig. 5 (student 3).—Arrow designates papular lesion fourteen days after penetration of larva; *A*, fourteen days; *B*, twenty-one days.

Intestinal Infection With the Cat and Dog Hookworm in Spontaneous and Experimental Creeping Eruption.—There is no evidence that patients with creeping eruption caused by larval invasion with the cat and dog hookworm *A. braziliense* later develop an

9. Fülleborn, F.: Experimentell erzeugte "Creeping Eruption," Dermat. Wchnschr. **83**: 1474 (Oct.) 1926.

intestinal infection with this parasite. Cultures of the stools of seven patients with extensive spontaneous creeping eruption seen last summer were taken for evidence of such an infection. In not a single instance could evidence of intestinal invasion be detected. Stools from the volunteers reported here were examined microscopically and culturally at a period when intestinal infection should occur (from the fifteenth to the twenty-eighth day) and no evidence of intestinal hookworm disease was found. It may be assumed from this that patients with creeping eruption caused by *A. braziliense* do not develop intestinal hookworm disease (total twenty-three cases). It must be remembered that creeping eruption and ground itch are two entirely different conditions, resulting, in the first instance, from a cutaneous disease from larvae of a cat and dog hookworm, *Ancylostoma braziliense*, and, in the second, from *Ancylostoma duodenali* or *Necator americanus*, the two species of human hookworms. The latter sometimes cause papular and vesicular lesions on the feet, where they penetrate the skin and gain entrance to the blood stream. After a migratory course they establish themselves in the intestinal canal, and in sufficient numbers they produce a true hookworm disease.

Fig. 6.—Hookworm larva in burrow; tissue removed fourteen days after penetration of parasite.

Spontaneously Acquired and Experimentally Produced Creeping Eruption Clinically Identical.—In textbooks, creeping eruption is usually described as a cutaneous disease characterized by the presence of narrow, somewhat tortuous, threadlike whitish or pinkish lines. This definition should include papular and frankly vesicular lesions, as the latter are by no means infrequent in this condition. Some authors distinguish two types of lesions, superficial and deep, the superficial being the more typical and usually reported as due to bot-fly larvae. The deeper type, occurring in the subcutaneous and underlying structures, was without exception found due to *Hypoderma*, the common "heel fly" grubs of cattle.

Austmann [10] has attempted to show that cases which present vesicles are probably due to nematode larvae, those presenting erythematous or papular lesions being provoked by larvae of the horse bot.

Tamura,[8] in an exhaustive review of the subject, has attempted to divide creeping disease, according to its clinical manifestations, into the erythematous, the papular, the erythematopapular, the erythematovesicular, the papulovesicular, the erythematopapulovesicular and the frankly vesicular form. Such a classification seems unwarranted. In accidentally acquired creeping eruption, all types of lesions enumerated by these authors may be observed in the same patient. This is especially true in those extensive cases presenting hundreds of lesions.

Two young brothers observed last summer presented many infiltrated intensely pruritic, pea-sized papules over the buttocks, thighs and legs. Although the incidence of creeping eruption was high at the time, the true diagnosis was not suspected until two weeks later, when the patients were again referred to me by a local pediatrician. At this time the diagnosis was evident. Intermingled with a few remaining papules were tortuous lines, erythematous or vesicular in type.

It must be remembered that papular lesions mark the sites of penetration of the larvae. Within two days after the larva has migrated from the papular lesion, only a tortuous line is visible. During its period of rest, a shotty, papular infiltration marks the site. The migrations of a parasite within the skin may cause a single type of lesion in a given host, varying from a slightly elevated erythematous line to a frankly vesicular lesion several millimeters in height. When many lesions are present in the same individual, all types may be encountered.

The clinical manifestations of experimentally provoked creeping eruption are indistinguishable from those of the spontaneously acquired cases. These various types and combinations of types of eruptions were noted in the experimental cases. As the latter eruptions were provoked by a pure culture of larvae from a single adult female worm, the variations encountered can be explained only by the individual skin susceptibilities of the different hosts. Since a single culture of larvae was found to cause clinically varying types of lesions in the experimental cases, it is presumed that in the spontaneous cases the same holds true.

SUMMARY

Creeping eruption was experimentally produced in sixteen out of eighteen volunteers by the application of larvae of a cat and dog hookworm, *Ancylostoma braziliense*, to the unabraided surface of the forearm. The eruptions produced were analogous in all respects to creeping eruption accidentally acquired. Penetrations of the larvae occurred within a few minutes after their application to the skin. No visible lesion, a pin-head sized erythematous macule or a slightly larger sized urticarial papule marked the site of penetration of the parasite. Within an hour or two, the arms of all volunteers appeared normal. Within from ten to twenty-four hours, pruritic, shotty papules were formed at the

10. Austmann, K. J.: Creeping Eruption, J. A. M. A. **87**: 1196 (Oct. 9) 1926.

sites of ingress of the larvae. Migrations started as a rule on the fourth day, as evidenced by a burrowing, intermittent stinging pain and linear, progressing lesions extending from the papules marking the points of entrance of the larvae. Linear lesions were often interrupted by papules which marked the sites of resting larvae. The disease in most instances was allowed to continue for two or three weeks before treatment with ethyl chloride or ethyl acetate was instituted. Untreated larvae remained in the skin for days or weeks. Most of these, however, were probably removed from the skin with the finger nails while the patient was scratching. An average eosinophilia of 4.8 per cent without actual increase in the total number of white blood cells was noted at the height of the eruption. Microscopic examination and cultures of the stools of the volunteers did not show any evidence of intestinal infection.

CONCLUSIONS

Creeping disease is not an etiologic entity. Four different parasites have been found to cause such cutaneous conditions.

First stage larvae of *Gastrophilus*, or the horse botfly, have been recovered from creeping disease in man in nine instances. Most authors were agreed that these larvae could be seen as a black dot or speck at the progressing end of a linear lesion. These could be extricated from the skin in much the same manner as an *Acarus scabiei* is removed from its burrow. The popular belief that creeping eruption is frequently due to this fly larva must be erroneous. In hundreds of cases of creeping eruption occurring in Texas and in thousands in Florida, this larva has never been recovered from a single case. All in all, a creeping myiasis due to larvae of the common horse bot-fly must be exceedingly rare. The incidence of recovery of such fly larvae in cases of creeping disease must be high, because of the large size of the larvae and the ease with which it is recovered.

At least ten cases of human infestation with larval forms of the cattle grub fly have been recorded in the literature. These have dealt mostly with deep migrations of the larvae and do not fit the accepted description of creeping eruption. In most human cases the larvae of this common heel fly of cattle have been recovered from abscesses, tumors and furuncle-like lesions; only occasionally have they made linear lesions on the cutaneous surface. When they do occur as linear lesions, the larvae make extensive incursions, often traversing the length of the body one or more times, and persist in the skin for several months. In such cases resting periods of the larvae are marked by painful, nodular swellings 1 or more inches in diameter. One should have little difficulty in differentiating this type of creeping disease from creeping eruption. Human infection with larvae of this type should be designated as a deep and migrating myiasis, and not as creeping eruption, as is frequently done.

Human creeping disease from pig and cat nematodes of the genus *Gnathostoma* has been reported from the far East, the recorded cases being confined to Siam, the Malay States, China and Japan. Of the seven recorded cases of gnathostomiasis in man, only three have appeared as a creeping disease. Like the lesions caused by *Hypoderma*, most of the lesions in these cases were in cutaneous abscesses and tumors. The elongated worms, often 1 cm. or more in length, were easily extricated from their burrow. The disease caused by this nematode is of little importance to us, since such a condition has never been recorded in this country.

A review of the literature shows that the majority of patients with creeping eruption give a definite history of bodily contact with damp sand or earth several days previous to the development of linear lesions. Of sixteen cases of creeping eruption seen during the past year, infection could apparently be definitely traced to damp sand contaminated with the excreta of dogs or cats. In four instances the disease could be traced to an isolated bed of sand known to be frequented by two cats harboring an intestinal infection of the cat and dog hookworm, *A. braziliense*. Applications of pure cultures of the larval forms of this hookworm to the human skin resulted in penetration by the larvae and the production of typical serpiginous lesions. A few of the papules did not develop linear lesions. One of these was excised two weeks after penetration, and revealed a hookworm larva within a burrow in the epidermis.

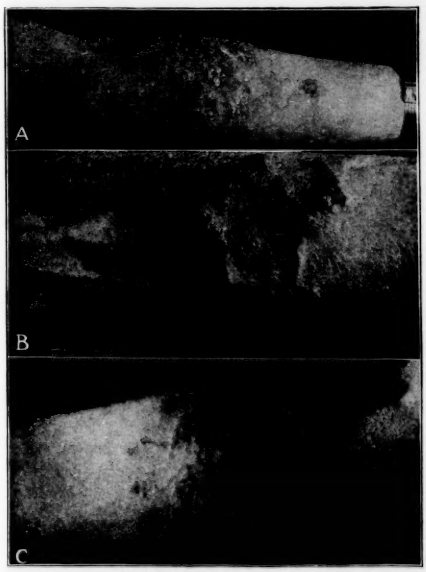

Fig. 7.—Types of experimental lesions in three students: *A*, fifteen days; *B*, *C*, fourteen days.

From a study of creeping eruption and its mode of contraction, I am of the opinion that this disease is caused by infective larvae of a cat and dog hookworm, *Ancylostoma braziliense*, and that the infection is obtained from moist sand and earth contaminated by such animals.

ABSTRACT OF DISCUSSION

DR. FRED WISE, New York: I should like to ask two questions with reference to two patients whom Dr. Shelmire cited as having improved under the influence of fever. I wonder whether he has tried the baking treatment, with extremely high degrees of heat. The other question may be foolish, but what prevents these nematodes from entering a superficial vein?

DR. BEDFORD SHELMIRE, Dallas, Texas: Baking of the affected areas, as suggested by Dr. Wise, has not been tried. Migrations of these larvae in the skin can be appreciably increased by placing the affected parts in warm water or close to a stove or open fire. As increased heat of the affected parts seems to increase activity of the parasite, it hardly seems probable that baking would be of curative value in this condition. I cannot say what prevents these larvae from penetrating the superficial veins of the affected area. It is possible that an occasional larva does enter the lumen of a vein and might possibly eventually reach the intestine. These larvae do not multiply or reach maturity in the skin. The same probably holds true if they happen to reach the intestine, for in none of the experimental cases has intestinal hookworm disease developed. Stool cultures in seven spontaneous cases also failed to show intestinal infection.

DIFFERENTIATION BETWEEN CORONARY THROMBOSIS AND ACUTE ABDOMINAL CONDITIONS *

J. P. ANDERSON, M.D.
CLEVELAND

A typical anginal attack is readily recognized, as it comes on suddenly after exertion or after a large meal, is characterized by pain of a substernal pressure type radiating to the left arm, and is relieved by standing still for a minute or two or by the use of vasodilators such as glyceryl trinitrate. An attack of coronary thrombosis can best be described clinically as an attack of angina with excruciating pain which is not relieved by glyceryl trinitrate and can be relieved only by

Fig. 1.—Marked atheromatous degeneration of the coronary vessel with great reduction in the size of the lumen—a precursor of coronary thrombosis.

repeated large doses of morphine. The sense of impending death is also associated with such an attack. As long as the pain is limited to the chest or arms diagnosis is not difficult, but when it radiates to the abdomen, or especially when it is almost entirely limited to the abdomen, it is often erroneously diagnosed as acute indigestion.

Because of the suddenness of the onset and the presence of pain in the upper part of the abdomen, a surgeon is very often called in consultation and he finds himself at a loss to explain the patient's prostrated condition, the rigidity of the muscles and the tenderness under the right costal margin. Naturally he suspects the presence of an acute cholecystitis, of pancreatitis, or of a perforated ulcer; but if an operation is performed nothing is found that will logically explain the condition and the patient seldom recovers. What, then, is the condition in the heart that causes pain in the abdomen?

Fig. 2.—Injected specimen showing the appearance of coronary vessels in a case of marked arteriosclerosis of the right coronary artery (after Louis Gross).

With rare exceptions coronary thrombosis is the result of a previous coronary sclerosis with calcareous plaque formation. During some strenuous exertion a plaque is ruptured. The rupture may be a large one which causes much stretching of the artery and produces irritation of the nerves in the adventitia, or it may be a very small rupture which is accompanied by no more than a feeling of discomfort but is sufficient to allow some tissue fluid to escape and to produce a clot in the vessel at a later date. The formation of the clot is followed by a rather sudden ischemia of the portion of the heart muscle supplied by the artery, and sudden heart failure results.

Sudden heart failure may manifest itself in any or all of several ways. There may be ventricular fibrillation and sudden death; a sudden drop in blood pressure with syncope; sudden pulmonary edema, or a sudden engorgement of the liver and abdominal vessels. I think it is in the latter type of case that pain is present in the abdomen, the pain being caused by the sudden failure of the right side of the heart, with resultant engorgement of the liver and stretching of Glisson's capsule. We are all familiar with the swollen, tender liver that is present in subacute myocardial failure such as occurs in cases of mitral stenosis. This type of heart failure is not to be compared with coronary thrombosis either in severity or in suddenness, so that it is not surprising that there is so much pain in some of these cases.

I am not sure, however, whether the engorgement of the liver with the stretching of Glisson's capsule causes all the pain or whether there is also an unusual distribution of the referred nerve pain. In every case that I have seen the pain seemed to be over the liver itself and all along the liver margin, wherever it was palpable, and there was less associated muscle spasm than in acute abdominal conditions.

This is a very important diagnostic aid in cases in which gallbladder disturbance is suspected, since, instead of finding maximum tenderness over the gallbladder area, there will be no more tenderness there

* From the Cleveland Clinic.
* Read before the Section on Surgery, General and Abdominal, at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

than in the rest of the firm liver margin. It is, of course, important to keep in mind the possibility that an anomaly of the liver such as a Riedel's lobe may be present, for tenderness in a Riedel's lobe may simulate a palpable, tender gallbladder. I have had one such case.

EXAMINATION

The first and perhaps the most important point in the examination is the taking of a careful and unbiased history, attention being given to the familial history of death from high blood pressure, apoplexy, angina or so-called acute indigestion, and any illnesses in the patient's own history which might make one suspect the presence of one of these conditions. A history of distress after eating, relieved by sodium bicarbonate or vomiting, of attacks of colic, of undue gas and belching, or of typhoid is equally suggestive of possible trouble below the diaphragm.

On examination, the patient's color is usually ashen gray, owing to a slight cyanosis under the pallor of shock. Although the pain is severe, the patient usually tries to keep as still as possible because of a sense of impending disaster.

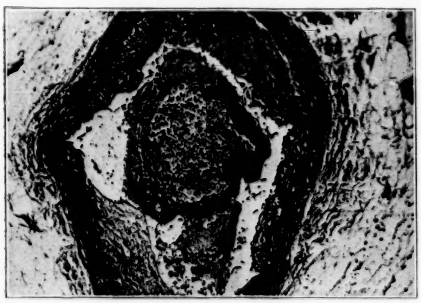

Fig. 3.—Coronary artery with clot in situ. This was made in a case of coronary thrombosis in which rupture of the left ventricle occurred forty hours after the onset of the first symptoms. Pain was felt over the liver and gallbladder, but aside from passive congestion the liver and gallbladder were found to be normal at necropsy.

I have seen some patients who had gas, with almost continuous belching and occasional vomiting. In one such case it was proved at autopsy that there was a ruptured coronary vessel with rupture of the heart, while the stomach and gallbladder were normal.

The blood pressure is usually reduced, but one must bear in mind that a normal reading in this respect may mean that a reduction to normal from a previous high level has taken place. Suppression of urine may occur. The pulse may be regular or irregular, rapid, slow or normal. The temperature is often subnormal at first, but rises to from 100 to 103 F. during the second day, remaining elevated for several days; the rise in temperature is accompanied by a leukocytosis which may be as high as 23,000, with an increase in polymorphonuclear leukocytes.

The heart is usually a little enlarged, though in the patient previously referred to, who died of cardiac rupture, percussion did not show any enlargement and the heart was not found to be enlarged at autopsy. Murmurs may be present or absent, a systolic murmur being found in about 50 per cent of the cases.

The heart sounds are distant and ticktack in character, and sometimes there is a gallop rhythm due to a reduplicated first sound. Any time after the second day a pericardial friction sound may be heard. This is not a constant finding, though it is pathognomonic when it does occur.

Emboli occasionally occur in distant parts but seldom before the third day.

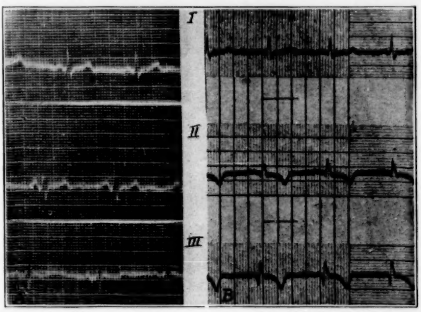

Fig. 4.—Electrocardiographic tracings in the case of coronary thrombosis reported here. *A*, the first tracing, is essentially normal. *B*, the second tracing, shows inverted T waves in leads II and III; a slight notching of Q, R, S waves in all leads; bifid P waves in lead II and slightly inverted P waves in lead III.

Dyspnea, cyanosis, Cheyne-Stokes respiration or pulmonary edema may be present in a mild or severe form.

The liver is sometimes enlarged and tender and in a few cases it has been extremely painful. There is seldom any tenderness elsewhere in the abdomen. Diarrhea is occasionally present and bile is occasionally found in the urine.

The electrocardiographic tracing shows some abnormality in nearly every case. One usually finds notching of the Q, R, S waves or abnormal T waves, though one case showed only inverted P waves in the third lead. In my experience abnormal rhythm has been rare.

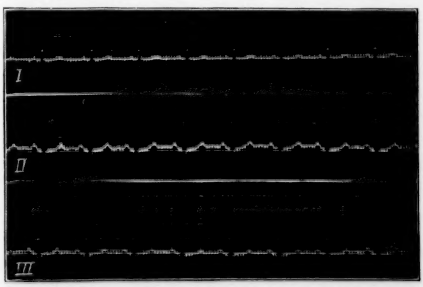

Fig. 5.—Electrocardiogram made in a case of coronary thrombosis which was diagnosed as cholecystitis and the patient sent for operation. This is the only case in the series in which normal waves were seen in the tracings and here the amplitude is reduced in all leads.

DIFFERENTIAL DIAGNOSIS

Coronary thrombosis is a condition which manifests itself in just as startling a manner as acute appendicitis or cholecystitis and is accompanied by just as clear-cut symptoms and signs. Hence it should be correctly

diagnosed in about 90 per cent of the cases, provided one has time to make a complete examination and to observe the progress of the case. The examination in a suspected case cannot be considered complete unless an electrocardiogram is made. Very often, however, the surgeon is called on to decide whether or not to operate, being expected to decide on the basis of the information available, viz., the history and physical

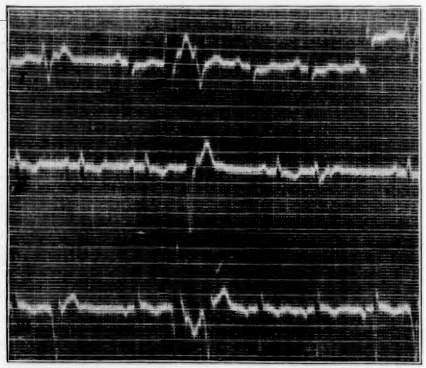

Fig. 6.—Electrocardiogram in a case of coronary thrombosis in which most of the pain was in the abdomen and was very severe. Operation was advised but refused. Later the diagnosis of pneumonia was made, as there was much moisture in the lungs. The patient recovered and is still alive but suffers so severely from angina that he is unable to work. The tracing shows frequent extrasystoles with inverted T waves in leads II and III and inverted P waves in lead III. It was felt that the condition was due to coronary thrombosis.

examination alone, although many of the signs, such as fever, leukocytosis and pericardial friction, which are useful for making a diagnosis, are not present until the second day.

Cholelithiasis with cholecystitis is the condition most commonly simulated. In cholelithiasis, however, pain is nearly always referred to the subscapular area, and in rare instances it is referred to the chest, but I have never known of its being referred down the left arm. The patient with cholelithiasis shows a greater tendency to roll and toss about than does the patient with coronary thrombosis, and a smaller amount of opiate will relieve the former condition. In cholelithiasis the pain is more spasmodic; the maximum tenderness is over the gallbladder and not over the entire liver edge, and bile is more frequently found in the urine.

A perforated ulcer causes sudden acute pain in the upper part of the abdomen with radiation downward, severe shock, and a boardlike rigidity of the abdominal wall. No pain is referred to the chest or arms, and no signs of cardiac failure develop.

Acute pancreatitis causes extreme pain, paroxysmal in type, with severe shock and frequent vomiting. The upper portion of the abdomen is distended and the muscles may be very spastic.

Other conditions, any or all of which may have to be considered in making the differential diagnosis, are the gastric crises of tabes dorsalis, renal colic, spinal arthritis, herpes zoster, diaphragmatic hernia or pleurisy and tumors of the spinal cord.

The presence or absence of fever, leukocytosis, pericardial friction and jaundice helps very little in making an immediate diagnosis, but the blood pressure and the character of the heart sounds, especially any signs of cardiac failure or any abnormal electrocardiographic phenomena, will nearly always enable one to arrive at a correct diagnosis.

It is necessary, of course, to keep in mind the possibility that two pathologic conditions may be present simultaneously, as occurred in one of our cases in which the patient had angina and coronary occlusion and also a subacute cholecystitis.

One recent case illustrates some important points:

REPORT OF CASE

A man, aged 59, came to the clinic in August, 1926, because of stomach trouble. In 1921 he had had an attack of indigestion and pain in the pit of the stomach after eating. He dieted and after three months was again well. In 1923 he had had another similar but more severe attack, which was followed by pain from one to two hours after eating and was relieved by food and by sodium bicarbonate and bismuth. He recovered in three months.

In June, 1926, the patient had had a sudden pain of a different type. It started in the epigastrium but spread up into the chest to the clavicles and radiated down each arm. It seemed to make breathing difficult. He became pale, had a cold sweat, and had to have a hypodermic injection for relief. He had had three similar but milder attacks from June to August, 1926. They were all brought on by exertion and were relieved by keeping quiet.

On physical examination the patient appeared normal. A roentgenogram of the stomach suggested an ulcer but another, made after the administration of atropine, was normal. The electrocardiogram was also normal, but I felt nevertheless that his trouble was caused by angina. He was advised of his condition, was given glyceryl trinitrate, and was urged to avoid any undue exertion.

The patient continued to have mild attacks of pain on overexertion, but they were promptly relieved by glyceryl trinitrate and by keeping quiet. He had no more stomach trouble.

In April, 1928, however, he had a severe attack of pain followed by much gas and indigestion. The only food which he could take without bringing on the pain was buttermilk. The pain came in the epigastrium at the lower end of the sternum and radiated up to the clavicles and down each arm. It was of the "shutting-off" type. At first it was so severe that he had to have hypodermic injections for relief.

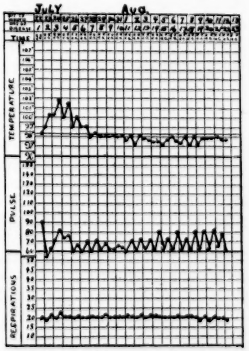

Fig. 7.—A typical temperature chart in a case of coronary thrombosis (after Frothingham).

On examination, the heart was essentially normal except for an accentuated aortic second sound. Roentgenograms showed evidence of a nonfunctioning gallbladder and of a gastric ulcer. However, the electrocardiographic tracing, which had been normal in 1926, showed several changes, all of which were suggestive of a coronary occlusion; namely, inverted T waves in leads II and III, with slight notching of the Q, R, S waves in all leads; bifid waves in lead II and slightly inverted waves in lead III.

It was felt that this patient probably had an active ulcer and perhaps also a diseased gallbladder, but that his recent attack of severe pain was due to a coronary occlusion. Consequently operation was not performed.

SUMMARY

A few cases in which a differential diagnosis had to be made between coronary thrombosis and angina and a lesion of the upper part of the abdomen have been reviewed with the purpose of emphasizing the following points:

1. Coronary thrombosis can simulate upper abdominal lesions.

2. This condition should be kept in mind in every case of upper abdominal pain in a patient over 45 years of age, especially in a man.

3. A history of previous heart trouble, anginal attacks or hypertension, a familial history of these diseases, or, on the other hand, a history of recurrent stomach trouble is very significant.

4. On first examination the following signs should be watched for carefully: evidences of heart failure such as enlargement of the heart; basal râles in the chest; an enlarged, tender liver; cardiac irregularity, or gallop rhythm with a split first heart sound at the apex; a pericardial friction rub, or a low blood pressure in a patient known to have had a higher one previously.

5. An electrocardiographic tracing is a necessity in such cases and since portable electrocardiographs are now available, there is no reason why tracings cannot be obtained.

6. This is a condition in which the surgeon and internist should work in close cooperation, but the internist should also be a good cardiologist.

Euclid Avenue at Ninety-Third Street.

ABSTRACT OF DISCUSSION

DR. CHARLES A. ELLIOTT, Chicago: This is a subject which clinicians should keep in mind. I suppose it is more difficult for surgeons than for internists to bear in mind that coronary thrombosis may simulate upper abdominal lesions because of the fact that the former see relatively few patients with heart disease. Coronary thrombosis with abdominal symptoms is after all an infrequent occurrence. In its infrequency lies the danger. A surgeon is caught off his guard and may inadvertently operate. In an emergency, an accurate diagnosis might not be possible. The real question at that time is whether to operate or not. Usually little difficulty should be encountered in recognizing conditions which demand immediate operation. Of these I think acute perforation and acute pancreatitis are, perhaps, most important. Light shock is present in acute perforation, true shock in pancreatitis; in both there is boardlike rigidity of the abdomen. Great difficulty, however, may be encountered in differentiating between coronary thrombosis and gallbladder colic. In the clinical study of the patient, which should be comprehensive, the clinical history and also the physical observations, as indicated by Dr. Anderson, are of greatest importance. Gas and indigestion are characteristic of both these conditions. About half of the patients with arteriosclerosis who come to the internist have gas and indigestion as outstanding complaints. Electrocardiographic studies are certainly in order. Any abnormality in the electrocardiogram ranging from low voltage and abnormal T waves to the typical manifestations of bundle branch block may be present. Such conditions should be decisive. Abdominal pain produced by coronary occlusion is considered by most authors, I believe, to be a referred pain similar to that occurring in the left arm in angina pectoris. In one case the pain is referred to the abdomen by communicating branches of nerves by way of the vagus; in the other, it is referred into the arm by the brachial plexus and the communicating branches of the sympathetic. That abdominal pain in coronary thrombosis may be due to acute cardiac failure and swelling of the liver has been pointed out by the author. In gallbladder colic the pain centers around the gallbladder; it may be referred. It seems to me that the emphasis has been too much on the referred pain of gallbladder colic to the shoulder and to the back. I think that emphasis should be placed rather on the fact that gallbladder pain centers in the gallbladder region. It may be referred to the right shoulder or to the cardiac region, but rarely, if ever, to the left shoulder. The presence of referred pain alone without tenderness and pain in the gallbladder region, is, I believe, a rare occurrence, if indeed it ever occurs. Finally, it would seem that in no case in which there is a possibility of the presence of coronary thrombosis should the patient be subjected to an operation until a diagnosis of coronary thrombosis has been ruled out.

DR. J. P. ANDERSON, Cleveland: It was a misquotation on my part when I said that gallstone pain was always referred to the back.

GRANULOMA COCCIDIOIDES

REPORT OF A CASE RESPONDING FAVORABLY TO ANTIMONY AND POTASSIUM TARTRATE *

C. C. TOMLINSON, M.D.
AND
PAUL BANCROFT, B.Sc.
OMAHA

Granuloma coccidioides is a rare, usually fatal, infectious disease, caused by the organism *Coccidioides immitis*, the first case of which was reported by Wernicke [1] in Buenos Aires in 1892. In 1896, Rixford and Gilchrist [2] first described the morphologic characteristics of the organism, and recorded their observations of its clinical and microscopic pathology. In 1900, Ophuls [3] more accurately described the life cycle of the organism and noted that it multiplied in the host by endosporulation, a fact which definitely distinguishes this disease from blastomycosis, with which it was for a time confused.

Fig. 1.—Typical mature organism of coccidioides immitis appearing in pus from patient's foot; diameter, 60 microns.

We have been able to find records of eighty-eight cases. It has been impossible to obtain accurate information on several points of interest, as many of the records are incomplete. Of the eighty-eight cases, some knowledge of the progress and outcome is known in

* From the Department of Dermatology and Syphilology, University of Nebraska College of Medicine.

* Read before the Section on Dermatology and Syphilology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Wernicke: Centralbl. f. Bakteriol. **12**: 859, 1892.
2. Rixford, E., and Gilchrist, T. C.: Two Cases of Protozoan Infection of Skin and Other Organs, Johns Hopkins Hosp. Rep. **1**: 209, 1896.
3. Ophuls, William: A New Pathogenic Mold, Philadelphia M. J. **5**: 1471, 1900.

seventy-three. Forty-nine of these patients, or 67 per cent, are known to have died of the disease, ten were living but actively infected at the time of reporting, and fourteen were reported as improved or cured. Of the patients reported as improved by treatment the majority were subjected to radical surgery, in most instances amputation, which has been looked on as offering the only hope for recovery.

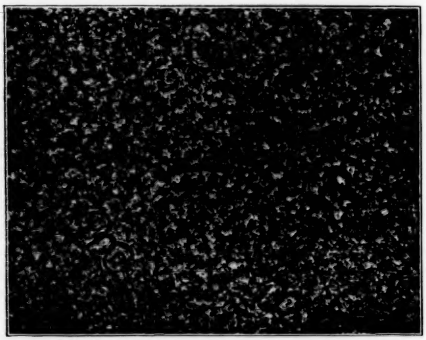

Fig. 2.—Adult organisms in pus from patient; low magnification.

Definite improvement and possible cure following conservative measures of treatment prompt this report.

REPORT OF CASE

History.—A man, aged 26, born in the Hawaiian Islands of American parents, was brought to the United States at the age of 5 months, since which time he has lived continuously in the states of Nebraska, Illinois, Wisconsin and Michigan.

In 1924, he spent three months on a tour of the West Coast, which extended from Seattle to San Francisco, and included a stay of two or three weeks in the San Joaquin Valley of California. He has attended school all his life, and at the present time is a junior in the University of Nebraska College of Medicine. His summer vacations have been spent for the most part in farm labor.

The month of September, 1926, was spent at the University of Pennsylvania in the laboratory of Dr. Fred Weidman, where he was engaged in research work with the organism *Coccidioides immitis.* He returned to the University of Nebraska, Oct. 1, 1926, where research with fungi, including *Coccidioides immitis,* was continued throughout the winter months.

Early Course of Disease.—During the latter part of April, 1927, he experienced three or four attacks of moderate chills and fever, and complained somewhat of general malaise, and slight backache and headache, none of which were severe enough to interrupt his attendance at school. About this time, on one occasion following a moderate cough he noticed a small amount of blood-streaked sputum.

Two weeks later, he experienced slight pain and swelling of the left foot, which during the following week became more pronounced until he entered the University Hospital, May 21. Examination at this time showed generalized swelling of the entire foot, more pronounced on the plantar surface. The left inguinal glands were enlarged and tender. The temperature was 102 F.; the leukocyte count was 18,500. An x-ray study of the foot did not reveal any change in the bones. A stereoscopic film of the chest demonstrated moderate increase in the density of the peribronchial markings, which Dr. Carlton B. Pierce interpreted as evidence of peribronchial infection. Hot wet dressings of boric acid were applied to the foot, and ice caps to the inguinal glands.

May 23, his temperature had returned to normal. The pain persisted in the foot, which now showed definite fluctuation on the plantar surface. A longitudinal incision was made in the midplantar area, and 2 cc. of dirty yellow pus was found beneath the deep plantar fascia. In fresh smears made from this pus there was seen a spherical body, about 40 microns in diameter, with a double contoured refractile wall. The appearance of the organism and the fact that the patient had been working with *Coccidioides immitis* seemed to justify a tentative diagnosis of granuloma coccidioides.

The foot remained painful, and two additional incisions were made, May 29, when 3 ounces (90 cc.) of pus was removed. Mature organisms of *Coccidioides immitis* were again demonstrated in smears of this pus, specimens of which were sent to Dr. Fred Weidman, who confirmed our results.

On account of the favorable report by Guy and Jacob[4] following the treatment of a case of granuloma coccidioides by intravenous injections of antimony and potassium tartrate and the application of x-rays to the lesions, this plan of treatment was decided on and a complete record of the course follows:

Treatment and Subsequent Course.—Over a period of three months the patient received 1 per cent antimony and potassium tartrate intravenously, on alternate days, and in dosage ranging from 2 to 8 cc. With increasing dosage, toxic symptoms developed, consisting of sharp rheumatic pains, nausea and vomiting, and finally fascicular twitchings of the entire skeletal musculature. The reaction regularly occurred five hours following treatment, and persisted for from three to forty-eight hours. Its severity was in direct proportion to the dosage.

On two occasions, 8 and 20 cc., respectively, of the reported nontoxic 0.4 per cent antimony thioglycollamide was given intravenously. Severe reactions similar to those experienced with antimony and potassium tartrate were noted, and administration of this alternate antimony compound was discontinued.

In addition to the intravenous injection of antimony and potassium tartrate the patient received half a skin unit of x-ray, unfiltered, at intervals of from ten to fourteen days. Under this plan of treatment, the foot healed rapidly. The patient gained 17 pounds (7.7 Kg.), and his feeling of well being returned. In the light of the experiences of others, we

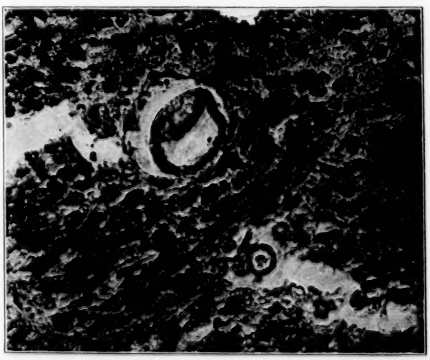

Fig. 3.—Tissue section from abscess in guinea-pig eight days after inoculation showing typical mature organism.

hesitate to state that a cure has been obtained, but the excellent health, with complete absence of either local or general symptoms enjoyed by our patient for the past year would indicate that the treatment was effective.

COMMENT

From the spot-map it will be seen that a very high percentage of reported cases of this disease have been

4. Guy, W. H., and Jacob, F. M.: Granuloma Coccidioides, Arch. Dermat. & Syph. **16**: 308 (Sept.) 1927.

found in California, the majority in the San Joaquin Valley. No satisfactory explanation of this fact has been offered. From a consideration of such isolated cases as those which occurred in South America and in a woman who had spent her entire life on an island in South Carolina, it would appear improbable that the life of this organism apart from the human host is confined to California. We do not feel that the sojourn of

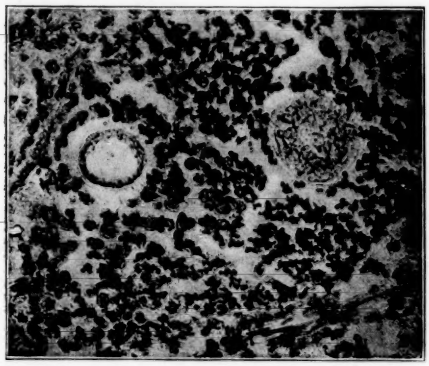

Fig. 4.—Tissue section from guinea-pig showing two adult organisms containing endospores.

our patient in that locality four years ago was responsible for his infection. Rather, it is our opinion that his infection occurred while working with the organism in the laboratory. This deduction is supported by the experimental incubation period of from ten to fourteen days. This wide distribution of the recorded cases would indicate that the parasite is present in all parts of the United States, and it is probably the etiologic factor in many cases of systemic disease which have been diagnosed as blastomycosis or tuberculosis.

The occurrence of (1) active pulmonary disease simulating tuberculosis in which the tubercle bacillus cannot be demonstrated, (2) multiple abscesses of obscure etiology and (3) subacute or chronic inflammatory lesions of the skin, granulomatous in character, should lead the clinician to consider the possibility of infection with *Coccidioides immitis* and to direct a pathologic examination for the parasite.

There seems little doubt that this patient's infection is a laboratory accident which resulted from working with the organism. Ahlfeldt [5] has shown through animal experimentation that the infection may take place by way of the skin or through the gastro-intestinal or respiratory tracts, the lungs offering the most common portal of entry. Spores of fungi have been shown by Farley [6] to remain alive for two years, and as they are light enough to float about in the air, the danger of infection from working with these organisms is apparent. It is our belief that laboratory workers have not used any particular means to prevent infection, and that the course of events in this case might well serve as a warning to others.

5. Ahlfeldt, F. E.: Studies in Coccidioidal Granuloma, Arch. Path. **2**: 206-216 (Aug.) 1926.
6. Farley, D. L.: Viability of Ringworm Fungi in Dry Cutaneous Material, Arch. Dermat. & Syph. **3**: 759 (June) 1921.

The use of antimony and potassium tartrate in these cases is empiric. Compounds of antimony have long been employed in medicine. Forgher and Gray [7] state that toward the end of the seventeenth century more than a hundred preparations of antimony were in common use, antimony and potassium tartrate being one of these. In modern times this drug is most frequently employed in tropical diseases of parasitic origin and in granuloma inguinale. In the latter disease it is of value only when given intravenously. Christopherson and Gloyne [8] believe that it acts through its general physiologic effect on body tissues. They state that it has a marked action on the liver and that it probably alters protein metabolism. It is their opinion that the toxic effects of intravenous injections of antimony and potassium tartrate are of an allergic nature. Our case does not seem to confirm this explanation of antimony toxicity, as reduction of the dosage was accompanied by immediate cessation of toxic manifestations. Griffiths-Jones [9] demonstrated appreciable amounts of lead and arsenic in good commercial products and considers the possibility of toxicity from the presence of these impurities not unlikely.

McGlinn [10] mentions the tendency of antimony and potassium tartrate injections to obliterate the veins. The majority of our injections were made at the same site and no such effect was observed. The influence of antimony and potassium tartrate on the course of the disease in this case is a matter of speculation. The only other case known in which this treatment was given is that of Guy; there was no recurrence after several months.

Our experience with the alternative salt, antimony thioglycollamide, was not encouraging.

Fig. 5.—Appearance of foot at the height of the activity of the infection.

The value of the x-ray in the treatment of granulomatous structures is well recognized. It is known to have an almost specific action on other fungus infec-

7. Forgher, R. G., and Gray, W. H.: The Chemotherapy of Antimony, J. Pharmacol. & Exper. Therap. **18**: 341-359, 1921.
8. Christopherson, J. B., and Gloyne, S. R.: Biochemical Action of Intravenous Tartar Injections, Lancet **1**: 227-229 (Jan. 30) 1926.
9. Griffiths-Jones, E.: Lead and Arsenic in Tartar Emetic, Lancet **1**: 194-195 (Jan. 23) 1926.
10. McGlinn, J. A.: Treatment of Granuloma Inguinale with Tartar Emetic, Am. J. Abst. & Gynec. **12**: 665-672 (Nov.) 1926.

tions, notably sporotrichosis and blastomycetic dermatitis. This favorable influence is probably best explained by MacKee,[11] who states that the x-ray has a profoundly stimulating effect on all lymphatic structures.

Both the macroscopic and microscopic appearances of the lesions of coccidioidal granuloma resemble the lesions of tuberculosis. This similarity is so close that a differential diagnosis can be made only by the demonstration of the organism.

Coccidioides immitis has two distinct cycles, one in the tissues and the other in aerobic culture. Morphologically these two cycles have nothing in common. In smears of pus from active lesions the adult organism is not hard to demonstrate, whether stained or unstained. Figure 1 shows a typical mature organism as they appear in the tissues and pus. It is about 60 microns in diameter. Attention is called to the double contoured wall and the granular cytoplasm. Figure 2 is a lower magnification showing adult organisms in pus taken from the foot.

Figure 3 shows mature organisms in a tissue section taken from an abscess in a guinea-pig eight days after inoculation. The large organism shows very well the double contoured wall. There is a smaller organism in the lower right hand corner.

Figure 4 is a tissue section from a guinea-pig showing a mature organism filled with irregularly shaped

Fig. 6.—Map showing the distribution of cases in the United States.

spores. Eventually the shell of the parent organism ruptures and the spores are liberated. This process of endosporulation is the only mode of reproduction in the tissues. The double contoured spherical form is the only structure that develops in the tissues. There is no budding. In contradistinction, the blastomycete, which is closely related, never produces endospores and reproduces in the tissues only by budding.

If a mature spherical organism is placed in a hanging drop culture and observed through a microscope, very soon a mycelial thread will be seen growing out of the sphere. All subsequent growth is entirely by the formation of mycelial threads, which branch and extend throughout the medium. Spores are formed within the mycelia. Recently cultures have been obtained in ascitic fluid under anaerobic conditions. The common aerobic cultures are moldlike.

The gross colonies on artificial mediums appear in a week or ten days and grow quite rapidly. At first the growth is colorless, moist and adherent to the medium. Characteristic of this early growth are the fine spicules or feather-like structures that are sent into the air.

If some of the dry moldlike culture is injected into a guinea-pig, the spherical bodies soon develop by an enlargement of the mycelial segments. The fragments of mycelia disappear and only spherical bodies can be found, reproducing only by endosporulation. The incubation period is about ten days, during which time the animal may gain in weight and appear in good health. The pig then loses weight rapidly and dies several days later. Autopsy reveals abscesses at the sites of injections and miliary abscesses and tubercles scattered throughout the viscera. In these lesions, numerous spherical forms can be recovered.

SUMMARY

1. After a critical review of the literature on granuloma coccidioides, with the elimination of duplications and the addition of omitted cases, it was found that there has been a total of eighty-nine cases, including the one here reported.

2. Our case is the first to be reported of granuloma coccidioides acquired by an individual working with the organism in the laboratory.

3. Definite improvement and possible cure may follow conservative methods of treatment.

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ABSTRACT OF DISCUSSION

DR. FREDERICK M. JACOB, Pittsburgh: The case mentioned by the authors as coming from Pittsburgh was interesting in that the disease was contracted in southern California, where the patient was at that time under treatment for tuberculosis. It was his good fortune to return to Pittsburgh and come under the care of a competent bacteriologist; otherwise the diagnosis of tuberculosis would possibly not have been questioned. A diagnosis of sporotrichosis was made from the description of the case, and only after some little time did we get a report on the cultures, which changed the diagnosis to granuloma coccidioides. The treatment had been with iodides, but the patient did not seem to realize the gravity of the disease. He did not tolerate the iodides very well and would not take them. We were at a loss as to what to do, and Dr. Guy suggested trying antimony and potassium tartrate, on account of the fact that this drug had a good effect in many of the unusual tropical diseases. The patient took this with good effect, and after two years is still in good condition. Like some cured syphilitic patients, he takes a little treatment every now and then for luck. He suggested a few weeks ago that his reactions sometimes were very severe with larger doses, but he found that the preparations made by the druggist in his home town caused more severe reactions than did those in ampules made by some of the drug manufacturers, and that preparations made at home became cloudy after a short time and caused severe reactions. It is unfortunate that antimony and potassium tartrate has such a bad name, for when it is used intravenously severe reactions are not frequent if a good preparation is employed. We had the same experience reported by the authors; namely, that with good technic there is no local reaction, and many injections can be given into a single vein without thrombosis.

DR. LAURENCE R. TAUSSIG, San Francisco: Granuloma coccidioides is relatively common in California. There are always a few cases at the various county hospitals. At our last state meeting there was a discussion of coccidioidal granuloma, and one of the pathologists remarked that on going over the old pathologic material he was interested to find a specimen labeled tuberculosis which on further study proved to be a coccidioides infection. A number of pathologists who were present agreed that the same error undoubtedly occurs every now and then owing to the clinical and pathologic similarity of the two diseases.

DR. MOSES SCHOLTZ, Los Angeles: In Los Angeles we see quite a few of these cases of coccidioidal granuloma. One feature of interest is that most of them occur in Mexicans. Clinically the disease is more like tuberculosis than anything else

11. MacKee, G. M.: X-Rays and Radium in the Treatment of Skin Diseases, ed. 2, Philadelphia, Lea & Febiger, 1927, p. 394.

but the fact that we are always on the lookout for coccidioides helps our diagnosis. The laboratories, in some instances, are unable to find the organism. It is also clinically evident that the condition from the very start is more likely to be systemic than local. Most of the patients finally die from chest complications. Recently, one of our associates has tried using copper colloid intramuscularly, with good effects.

DR. WILLIAM ALLEN PUSEY, Chicago: I have been interested in this subject for many years. My attention was early called to the presence of the disease in the San Joaquin Valley, and I wondered whether it would not prove to be more widely distributed. It is very prevalent there and rare in other parts of the country. I think that it is one of the compensations for the many advantages of California that they should have this. I blundered onto one of the few cases reported outside of California. A woman brought into the ward in the Cook County Hospital with a large number of very destructive ulcers would have been considered in the last stages of tuberculosis but for the ulcers. She presented a new picture of skin lesions, and I insisted that it was some variety of blastomycosis or some new disease with which we were unfamiliar. I maintained this attitude until one day I was agreeably surprised by a note from the pathologist, who was leaving the hospital. He felt that in view of my contention I was entitled to know that he had found coccidioidal organisms in the smears. These showed the endogeneous spores more clearly than any shown here today. The patient was of the lower class of Europe, had never been in California, and had lived under very ugly conditions. Dr. D. J. Davis in his consideration of the subject accepted that case as an authentic one, and he reported at least one other case in which the condition remained localized. I saw the patient some years after the condition was discovered. My impression is that the prognosis is a good deal like that of tuberculosis; namely, that the disease is not necessarily fatal but is very grave.

DR. UDO J. WILE, Ann Arbor, Mich.: I wonder whether the authors will emphasize again the clear differentiatior between coccidioidal dermatitis and what we now in the East recognize as blastomycosis. I recall very distinctly the preparations and sections of coccidioidal granuloma which were shown at a recent meeting of this section in the Scientific Exhibit, and I was impressed, as were most of those are who have not seen coccidioidal granuloma, with the striking resemblance of the histologic picture of coccidioidal granuloma to blastomycosis. Certainly its tendency clinically to resemble tuberculosis is striking. I wonder whether possibly some of the cases of true coccidioidal granuloma are not perhaps lost here in certain of our cases of blastomycosis. The points of differentiation are not entirely clear in my mind.

DR. FRED D. WEIDMAN, Philadelphia: This case which Dr. Tomlinson has reported has weighed heavily on me because the patient, a high grade medical student, worked in my laboratory. I have never been able to decide whether he contracted the infection there or elsewhere, but he certainly did not get the local infection of the foot there. There is a possibility that he contracted the lung infection there, with a subsequent blood metastasis to the foot. We must be much more careful in our laboratory handling of fungus material than in the past—my own personal experience with blastomycosis has emphasized this. We have been employing the usual bacteriologic methods and have not realized what a difference exists between mycologic and bacteriologic conditions. In the bacteriologic we have a pasty material to deal with, as we make a transplant, which sticks where it is put. In the mycologic we have light, fluffy material, and a draft or a hot wave from a Bunsen burner can float it all around. I have stopped all work with these micro-organisms in my laboratory until a proper type of ventilation is arranged, as in the chemical hood, so that all currents of air will be directed away from the laboratory worker. The second point I wish to emphasize is the one which Dr. Wile raised; i. e., that it is becoming increasingly difficult to differentiate between many of our diseases. The recent experience we have had with tularemia and its similarity to sporotrichosis is in point. Finally, we are hearing more and more, as Dr. Jacob would say, of the weird and wild diseases from California. We have known of "California disease" for many years. Recently, there was a very proper proposal that cheilitis actinica should be known as "Los Angeles disease" but this was emphatically repudiated. We now have another reason, in Dr. Sutherland-Campbell's recent paper on mycotic paronychia. If we do not rename the state of California as the moldy state, we must by some hook or crook have a "Los Angeles disease."

DR. SAMUEL AYRES, JR., Los Angeles: The cases of coccidioidal granuloma which I have seen, about five or six, at the county hospital, were all very characteristic. The early lesions begin as blind, fluctuant swellings, that may occur almost anywhere on the body, the loins or the thighs, and after persisting for a week or two they soften and if a surgical incision is made considerable pus will be found. The lesions do not heal readily but form sinuses leading down to the deeper structures. I think that the resemblance to tuberculosis is particularly striikng. Dr. H. P. Jacobson of Los Angeles has secured some very good results by injections intramuscularly of a preparation of copper.

DR. C. C. TOMLINSON, Omaha: In reply to the question of Dr. Scholtz regarding nationality, almost every nationality is now represented in the eighty-nine reported cases. I think that there is no particular predominance in the Mexican race. In regard to differentiation between coccidioidal granuloma and blastomycosis, the differentiation can be made only by the recognition of the organism. It cannot be made clinically. The remarks of Dr. Weidman on the danger of laboratory infection are important. The portal of entry is most frequently through the respiratory tract. The most important consideration is that we should be on the lookout for coccidioidal granuloma, and make sure that cases diagnosed blastomycosis are not coccidioidal granuloma. The recovery of the spherical body from cutaneous abscesses may mean coccidioidal granuloma rather than blastomycosis.

THE MENTAL DISTURBANCES ASSOCIATED WITH PITUITARY DISORDERS*

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The subject of mental disturbances associated with pituitary disorders embraces two large fields—psychiatry and endocrinology—in either of which any discussion is considerably influenced by the subjective interpretative point of view. Both fields present unlimited opportunity for fanciful speculation and interpretive mysticism. For such a study as is here proposed, the use of the experimental method is possible to only a very limited extent, and we must content ourselves with such clinical material as nature provides.

The psychiatrist, from necessity, must be interested in a general and total view of all the symptoms of the sick man. He well recognizes his limitations in estimating the etiologic importance of the multitudinous factors in the causation of mental disorder. Particularly is this true of somatic disorders outside the central nervous system. Similarly, conservative endocrinologists are hesitant in discussing with finality interglandular relationships, and in ascribing to glandular disease other changes that have taken place in the individual.

The pituitary offers special problems, first, because of its bilobar structure. Moreover, it is well known that even lesions in the floor of the third ventricle may give rise to clinical pictures very similar to those due to diseases of the pituitary gland itself. It is difficult and often impossible to interpret an apparent overactivity of one portion and underactivity of the other. Again, a problem is presented in cases in which there is a change from hypersecretion to hyposecretion.

* From the Menninger Psychiatric Clinic.
* Read before the Section on Nervous and Mental Diseases at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

Notwithstanding the many hazards encircling the problem, it is nevertheless safe to assume as a working basis that a state of overaction or of underaction of the pituitary produces its peculiar somatic symptom complex. On this ground only cases have been included which show one of these clinical (somatic) pictures, and the mixed pituitary cases have been excluded, as well as many suggestive of pluriglandular disorder. In all those selected, the mental symptoms were the primary cause for seeking medical attention. With the exception of the mentally retarded group, most of the patients included were sufficiently asocial or antisocial to necessitate institutional care.

CLASSIFICATION OF CASES STUDIED

An attempt to subclassify the various mental pictures according to the different types of dyspituitarism was unsatisfactory. Such a classification shows no uniformity of association of any particular mental picture with any type of pituitary disorder. Classified as to the type of dyspituitarism, the series includes forty-two cases, as follows:

I. Anterior lobe:
   - A. Hypofunction (Lorrain, infantilism) three cases (two hypophrenia with behavior disorder, and one schizophrenia).
   - B. Hyperfunction.
     1. Giantism, five cases (one hypophrenia, three schizophrenia, one undiagnosed).
     2. Acromegaly, eight cases (four cyclothymia, two hypophrenia, two schizophrenia).

II. Posterior lobe:
   Hypofunction.
     1. Preadolescent (adiposogenital dystrophy), eleven cases (four hypophrenia, four conduct disorder, one intellectually precocious, two hysteria).
     2. Postadolescent, seventeen cases (twelve schizophrenia, three cyclothymia, two intellectually retarded).

An attempt at classification of mental reaction types under various pituitary groups was only partially successful. In general, the correlations noted here were these: 1. In patients in whom hypopituitarism was manifest at an early age, a majority show some degree of retardation in the intellectual development. 2. Where hypopituitarism became manifest at a later age (postadolescent), the most frequent mental type is the schizoid picture. 3. In the late development of a hyperactivity, a cyclothymic reaction predominates. Exceptions are not uncommon in each of these groups.

In view of these observations, the relationship between any specific type of dyspituitarism and any specific mental reaction type cannot be assumed as proved. However, cases illustrating three types of intimate association between mental disorder and dyspituitarism are presented here.

MENTAL RETARDATION AND DYSPITUITARISM

The first type is the concomitant development in children of pronounced pituitary disorder and mental reardation.

CASE 1.—A girl, aged 16, the oldest of four children and the only one to show either mental or pituitary abnormalities, did not begin to walk or talk until 2½ years of age. Her parents first noted her intellectual retardation in her fifth year, when she was unable to learn as quickly as her younger sister, and frequently failed entirely. She entered school at 7 years, but even with application apparently would not learn anything. She was quiet and obedient, but in the evenings, when her mother tried to teach her, she would whine and complain. She was undeservedly passed into the second grade, and each year she was promoted, although she never did passing work in any subject. Each year she learned a little but had never shown any ability in anything.

Psychologically, the child had a mental age of 8 years, with an intelligent quotient of 50. She was 5 feet 2 inches (157.5 cm.) tall, and weighed 144 pounds (65.3 Kg.), which was 30 pounds (13.6 Kg.) overweight. She was awkward in her movements and had a fine tremor. The blood cytology was normal and the Wassermann reaction was negative. The urine was normal. The diagnoses made were hypophrenia and adiposogenital dystrophy.

CASE 2.—A boy, aged 12 years, was the younger of two children, the other not showing any abnormality. The father is an opinionated, subborn fellow, who believes the patient is normal. When the patient was 6 months old his mother noticed that he was dull and slow to learn. He learned to walk at 22 months and was 2½ years old before he used words. He was started to school but could not make any progress. He had been noticeably overweight since 6 or 7 years of age, and had always been awkward in his motions. He had learned to dress himself within the last year.

He was 5 feet (152.4 cm.) tall and weighed 107 pounds (48.5 Kg.); the excessive fat deposits about the girdles were conspicuous; the genitals were underdeveloped, and the testes undescended. The blood cytology and urine were normal; the blood Wassermann reaction was negative, and the dextrose tolerance curve was 115.7 mg. at the end of one hour and 101.3 at the end of the second hour. His mental age was 5 years and 6 months, with an intelligence quotient of 48. The diagnoses made were hypophrenia and adiposogenital dystrophy.

A direct connection between the intellectual retardation and the hypopituitarism in certain of such patients seems very probable but cannot be conclusively shown because of the impossibility of demonstrating the presence or absence of some more fundamental cause for the origin of both conditions. Both psychopathologic conditions and dyspituitarism are frequent in children without showing any relationship, and consequently when they do occur together it would certainly be incorrect to assume their direct relationship in every case. I have recently seen a child who presented a distinct picture of adiposogenital dystrophy and intellectually was precocious. Cushing [1] cites two such examples and Campbell [2] also cites a case.

The great majority of patients presenting the Fröhlich syndrome are dull, slow and irritable, and frequently are slightly retarded in their school standing. Such an opinion is expressed by Tucker [3] and Beck,[4] and Ebaugh and Hoskins [5] describe a boy, aged 16, of an adolescent aneoplastic type who was apprehensive, stupid and infantilistic. Cushing [6] states that in most cases of hypopituitarism sufficient to cause adiposity, some deviations from the normal intellectual level may be expected. The condition may in some way be linked with the drowsiness, but it would seem to be more than this alone. Psychic disturbances of greater or lesser degree were common in his series, and he cites two cases in which there were no general pressure manifestations to confuse the actual glandular symptoms: one, a sluggish, epileptic, adipose, preadolescent boy, with femi-

1. Cushing, Harvey: Psychic Disturbances Associated with Disorders of the Ductless Glands, Am. J. Insan. **69**: 965-990, 1913.
2. Campbell, C. M.: Psychical Disturbances in the Diseases of the Glands of Internal Secretion, Endocrinology **9**: 201-212 (May-June) 1925.
3. Tucker, B. R.: Pituitary Disturbance in Its Relation to the Psychosis of Adolescence, J. A. M. A. **71**: 330 (Aug. 3) 1918; The Internal Secretions in Their Relationships to Mental Disorder, Am. J. Psychiat. **2**: 259-272 (Oct.) 1922.
4. Beck, H. G., in Endocrinology and Metabolism, New York, D. Appleton & Co. **1**: 900, 1922.
5. Ebaugh, F. G., and Hoskins, L. G.: A Case of Dystrophia Adiposogenitalis, Endocrinology **5**: 21-28 (Jan.) 1921.
6. Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, J. B. Lippincott Company, 1912, p. 271.

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nism and overgrowth; the other an adolescent girl with chronic stationary hypopituitarism accompanied by deficient mentality and epilepsy. Lisser and Nixon [7] describe four cases in which hypopituitarism and hypophrenia seem very closely related.

BEHAVIOR DISORDERS AND DYSPITUITARISM

The second type of intimate association between mental disorder and dyspituitarism is illustrated in the cases showing a concomitant onset and development of behavior disorders and the physical signs of dyspituitarism.

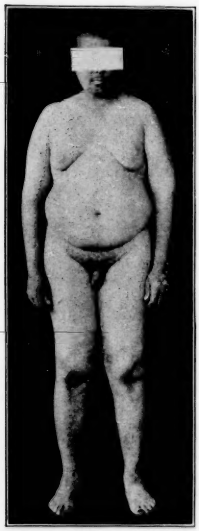

Fig. 1 (case 3).—Physical signs of posterior lobe hypopituitarism developed concomitantly with a schizophrenic mental picture.

CASE 3.—A man, aged 36, colored, whose adolescent years had not been unusual, at the age of 30 began to gain in weight, with a steady increase in two years from 140 to 270 pounds (63.5 to 122.5 Kg.), the weight which he has approximately maintained since. During this period of increasing in weight, he developed recurrent severe vertex headaches, lasting from six to ten hours. At the age of 32 he developed for the first time somnolent periods of from twelve to thirty-six hours' duration, from which he could not be aroused. These occurred at irregular intervals, averaging once in from forty to sixty days.

Mentally, except for stubbornness and wilfulness noted in high school, he presented no other behavior disorder until about the period when his headaches first appeared. At that time he participated, knowingly but without any apparent maliciousness, in hauling and storing some stolen automobile tires. The following year he became somewhat involved as the treasurer of an organization in which he overstepped his power in disbursing funds. He was subsequently arrested for again hauling some stolen goods. He mortgaged his four thousand dollar home to borrow $185. He began writing worthless checks, for which he was again placed under arrest. Not infrequently he would drive off in his car without bidding farewell to his family and would drive aimlessly for long distances, stopping only for gasoline. On one occasion, he drove from Topeka to Pittsburgh and returned by way of Detroit, covering a distance of more than 2,000 miles in four days, entirely without purpose except for his explanation, "To get the fresh air." Because of his behavior disorders he was brought for examination and subsequently committed to a state hospital.

He was 5 feet 9¼ inches (177 cm.) tall and weighed 255 pounds (115.6 Kg.). He presented an unusual appearance, with a relatively small head and large pads of fat, particularly marked about the breasts and girdles (fig. 1). The genitals were much underdeveloped. The blood cytology was normal and the Wassermann reaction was negative. The dextrose tolerance test showed a maximum rise of 129 mg. at the end of the first half hour. The sella turcica was small.

The patient had always talked reluctantly and seemed careless in his information, giving incorrect dates, vague time lapses, unreliable accounts of incidents and inadequate explanations. All his conversation was marked by indifference and a blunted emotional response.

CASE 4.—A woman, aged 42, three years after her marriage, at 21, began to increase in weight (fig. 2). This weight increase was gradual until she reached her present weight of 273 pounds (123.8 Kg.). The menses had been regular but she had not had any children. For fifteen years she had been subject to severe headaches, about twice a month, which lasted from twenty-four to forty-eight hours. About ten years before she began to develop somnolent periods, sleeping twenty-four hours or more at a time. This condition persists to the present time, although now she sleeps only from twelve to fourteen hours a day.

About the same time that she began to increase in weight she became more irritable and quarrelsome. She was repeatedly doing queer things about her home and was unable to get along with people. She progressively became more asocial and would sit alone, idle, and stare out of a window for long periods. If molested, she would become threatening, although she never carried out her threats. Because of her inadaptability she was placed in a psychiatric hospital, where she has made herself useful as a cook's assistant.

Both of these cases present a schizoid type of reaction, appearing concomitantly with the physical signs of hypopituitarism. Such a reaction was present in twelve of the seventeen cases of postadolescent hypopituitarism studied. It could not be determined in several of these cases whether the hypopituitarism became manifest before or after adolescence, nor was it possible so closely to associate in all cases the development of the behavior disorder and the signs of hypopituitarism as in the cases cited. The mental condition in several of these was unquestionably schizophrenia, and the fact that the mental disturbances in all cases seemed to fall into two well recognized mental types does not invalidate a close relationship between the pituitary gland and the mental disturbance.

Fig. 2 (case 4).—Symptoms of headache, somnolence and obesity developed concomitantly with a paranoid mental picture of irritability and seclusiveness.

In cases of simple deficiency of secretion as well as in those caused by neoplasm of the pituitary with hypofunction, the schizoid reaction type predominates. Tucker's [3] study of the psychoses that are associated with pituitary disorder in adolescence leads him to conclude that the most common form resembled schizophrenia. Timme [8] gives a symptomatic description of this mental picture as most commonly associated with hypopituitarism. Schilder and Weissmann [9] present a case of tumor of the pituitary with auditory and visual hallucinations, confusion, amnesia and somnolence. They quote Lhermitte and Bogaert as noting hallucinations in

7. Lisser, Hans; and Nixon, C. E.: Mental Retardation and Ductless Gland Disease, J. A. M. A. **81**: 1174-1179 (Oct. 6) 1923.

8. Timme, W.: Nonsurgical Treatment of Pituitary Disorders, Arch Ophth. **49**: 268-274 (May) 1920.

9. Schilder, P., and Weissmann, M.: Amente Psychose bei Hypophysengangtumor, Ztschr. f. d. ges. Neurol. u. Psychiat. **110**: 767-778, 1927.

similar cases. Cushing [1] states that he saw several patients at Danvers State Hospital with hypopituitarism who exhibited restless activity and hallucinations.

In contrast to the cases of hypopituitarism cited, the following case illustrates the concomitant development of a depression with hyperpituitarism:

CASE 5.—A woman, aged 55, a school teacher who had enjoyed a fairly successful career in her profession, at the age of about 35 began to notice enlargement of the hands and facial features along with periodic attacks of polyuria and headache. She consulted a physician, who, on examination of the urine, told her that she had diabetes. She responded fairly well to dietary treatment, and continued teaching.

At the age of 38, she had a mild depression, arising, she thought, from overwork and worry connected with teaching. She gave up her work for half a year and apparently completely recovered her mental health. Her acromegaly continued to become more prominent but she never felt particularly embarrassed by it or developed any sense of inferiority with it. She had had four attacks of depression, lasting from two to six months, during which time the polyuria and headaches were always more pronounced.

In four of eight patients with late hyperactivity of the posterior lobe, the chief psychopathologic condition was emotional disturbance. Dr. Leonard Mark's [10] most serious mental change was his despondency, and Cushing describes a patient who was very depressed and eventually committed suicide. Barker [11] regards it as a well founded fact that hyperpituitarism may be the cause of hypomanic states, and McCready [12] states that the manic-depressive type of psychosis is the one most frequently observed in hyperactivity of the gland. In contrast to this, Büchler [13] describes two cases of schizophrenia occurring with acromegaly.

While the mental reaction type varies even with the same type of pituitary disorder, the association in some cases is so close that I regard the mental symptoms as probably the direct result of a disturbance in the secretory activity of the pituitary gland, exclusive, of course, of cases of tumor, in which the mental symptoms might result from pressure on the frontal lobes.

MENTAL CHANGES SUBSEQUENT TO DYSPITUITARISM

The third type of intimate association between mental disorder and dyspituitarism is shown in the secondary development of inferiority feelings specifically dependent on the physical signs of the dyspituitarism; e. g., the obesity or hypopituitarism, the facial and manual disfigurement of acromegaly, or the amenorrhea of dyspituitarism.

CASE 6.—A college girl, aged 18, who physically presented a typical picture of hypopituitary obesity, had always been mentally alert, sociable and intellectually above the average, but hypersenitive. She came from a socially prominent family, and on her arrival at college was immediately pledged to a sorority. During the first few months, before her sorority sisters felt familiar toward her, she got along well. As time passed, and her dieting and treatment efforts were more in evidence, her sorority sisters began to joke with her and each other about her obesity, and, entirely without malice, continued until the girl became acutely depressed about it. It was necessary to enlist the aid of the housemother and several of the leading sisters in order to prevent her from resigning from the sorority and leaving college.

CASE 7.—A woman, aged 41, of a typical acromegalic build and facies, which began at the age of 29, apparently had led a normal life, having gone through college and having taught school during her early adult life. She first noticed the increase in her skeletal growth at 29 without alarm, and continued her teaching. At the age of 36 she had influenza, following which she began to have paroxysms of occipital headaches. She noted her increased irritability and her accentuated emotional responses. She attempted to find medical relief for her condition without success. Because of her appearance, she dreaded to meet old friends. She was acutely conscious of her disfigurement and had therefore avoided social engagements and given up her profession of teaching. Occasionally she cried and frequently felt depressed over the discouraging outlook for her future. She had lost her initiative and ambition.

Both these cases well illustrate mental changes, not directly of pituitary origin but precipitated by the pituitary disorder. Such inferiority feelings are noticeable in a large percentage of cases of dyspituitarism occurring in persons of superior, or even above the average, intelligence. Dr. Leonard Mark [10] in the record of his own malady, has aptly described the condition when he speaks of the periods of "feeling his acromegaly." Davis [14] calls attention to this particular type of mental reaction occurring with endocrine disorders, illustrating his point with a case of acromegaly. Davidoff [15] does not mention mental disorders in his study of the symptoms in acromegaly, but in a personal communication recalls several mental abnormalities, and one young man in particular, a dystrophic individual who compensated for his lack of masculine qualities by smoking long cigars and forcing himself to play the part of a rather weak and incompetent Don Juan.

SUMMARY

From a study of forty-two cases, I conclude that there is no uniformity of association of any particular mental picture with any type of pituitary disorder. An unsatisfactory attempt to classify the mental reaction types under various pituitary groups disclosed: (1) a majority of cases of preadolescent hypopituitarism showing some degree of retardation in intellectual development; (2) a majority of postadolescent hypopituitary cases presenting the schizoid picture; (3) a predominance of the cyclothymic reaction in the late hyperpituitarism. Such observations cannot be assumed to prove the relationship between any specific type of dyspituitarism and any specific mental reaction type. However, there is an intimate association between mental disorder and dyspituitarism in (1) the concomitant development in children of pronounced pituitary disorder and mental retardation; (2) the concomitant onset and development of behavior disorder and the physical signs of dyspituitarism, and (3) the subsequent development of mental changes directly dependent on the physical signs of dyspituitarism.

ABSTRACT OF DISCUSSION

DR. PETER BASSOE, Chicago: The relation of mental changes to acromegaly is the only kind of pituitary disease which I have had occasion to study. Acromegaly is the purest instance of unchallenged hypophyseal disease. Nearly every other form of so-called pituitarism has been challenged as really belonging to the brain. It is admitted that acromegaly is constantly associated with disease of the hypophysis. The incidence of mental

10. Mark, Leonard: Acromegaly: A Personal Experience, London, Baillière, Tindall and Cox, 1912.
11. Barker, L. F.: On the Relation of the Functions of the Glands of Internal Secretion to the Thinking, the Feeling, and the Striving of Man, J. Florida M. A. **13**: 254 (May) 1927.
12. McCready, E. B.: The Nervous and Mental Aspects of Endocrine Dysfunction, Internat. Clinics **2**: 134-149 (June) 1924.
13. Büchler, P.: Psychische Störungen im Verlaufe der Hypophyserkrankungen, Klin. Wchnschr. **2**: 591-593 (March) 1923.
14. Davis, T. K.: Endocrine Defects and Mental States, Arch. Neurol. & Psychiat. **4**: 155-190 (Aug.) 1920.
15. Davidoff, L. M.: Studies in Acromegaly: Anamnesis and Symptomatology in One Hundred Cases, Endocrinology **10**: 461-483 (Sept.-Oct.) 1926.

disorder in acromegaly is probably not very great as far as actual psychosis is concerned. In the first large thesis on acromegaly written by Souza-Leite in 1892, it was stated that mental disease syndromes had not been observed in any cases, but it was not long before cases with associated mental disease were reported. I analyzed those reports a few years ago and came to the same conclusions as those advanced by Dr. Menninger. In the milder forms, a condition exists which is very similar to what we discussed last year at Washington in connection with leprosy. To imagine oneself pronounced a leper, having to be segregated, ought to be enough to explain moderate degrees of depression. The same is true of acromegaly, especially in women. Being stared at would be sufficient to account for moderate degrees of sensitiveness and depression. When it comes to the real psychosis, there is no question about the manic-depressive type being the predominating one. When it comes to determining the cause of these psychoses, we are confronted by many factors. There is the hyperpituitarism and the secondary and almost constant changes in connection with the other endocrines. There is nearly always an early sexual inversion, as evidenced by each cessation of the menses, and many of the acromegalic psychoses resembling the involution types of melancholia. Some authors have ascribed the psychoses to changes in the thyroid and the suprarenals and have considered them complications of acromegaly due to the secondary polyglandular condition. Perhaps the changes in the sex glands may have a good deal more to do with these depressive psychoses than the changes in the pituitary itself. We must also remember that in acromegaly, as in many of the other pituitary disturbances, we are dealing with brain tumors. The very severe types of dementia that have been described are similar to what we see in other cases of brain tumor, regardless of the localization and depending on the pressure.

DR. WILLIAM ENGELBACH, St. Louis: It is true, as Dr. Menninger said, there is a great deal of speculation and mysticism regarding the relationship of these two intricate conditions; in regard to the diagnosis of pituitary disorders, however, I cannot agree with his ideas. I firmly believe that accurate diagnosis is comparatively easy in a majority of the cases. There is contention regarding the function of the various lobes, polyuria and the relationship of lesions of the brain to some of these complexes. All the recent work, however, of anatomists, physiologists and biochemists seems to substantiate the original ideas that clinicians advanced years ago regarding the function of the various lobes of the hypophysis. I also disagree with the author as to the prevalence of mental retardation as one of the prominent signs associated with pituitarism. From an analysis of quite a large series of cases, I believe that whenever there is any depression of the mental activities, the probabilities are strong that the thyroid is a complicating factor in the complex. For instance, the classic figure described as pituitary hibernation has been proved by therapeutic reactions to be a pituitary thyroidism and not a simple disorder of the pituitary gland. In seventeen or eighteen patients I have obtained a striking result by giving a combination of these two substances. All have been relieved almost completely of their symptoms, including the hibernation, by a combination of thyroid and pituitary substances. A number of my first patients did not react to the single administration of pituitary or thyroid substance. That there is an associated mental disturbance of some kind in nearly all of these cases we must admit. Whether or not, however, this is related to or caused by pituitary abnormality is a question in many cases. Three things have impressed me in the prolonged observation of these cases as proving to a certain extent that this association was direct; that is, that the pituitary disorder had more to do with the mental aberrations than any other influence. The first is their onset at the same time that the marked pituitary disorders, such as the adiposity and the amenorrhea, occur. Secondly, when the therapeutic reaction is favorable in these patients, they can be relieved by pituitary treatment. Thirdly, in some cases these mental disorders can be produced by giving the specific extracts of either the anterior or the posterior lobe. In pituitary headache, I have frequently seen patients who will tell me before the hypodermic injection of pituitary extract is completed that their specific terrific headache has come on.

DR. WILLIAM C. MENNINGER, Topeka, Kan.: I agree with what Dr. Engelbach said about the diagnosis of pituitary disorders. It was because of their comparative ease of diagnosis that I chose that particular gland rather than some other one. I did not mean, either, that all hypopituitary patients were feebleminded, but I did intend to imply that in my experience the majority had shown some mental abnormalities, many of them a slight degree of mental retardation.

BENIGN HEMORRHAGES OF THE UTERUS *

HENRY SCHMITZ, M.D.
CHICAGO

Uterine hemorrhage is one of the most important clinical signs of diseases of women. The causative, functional and pathologic disturbances are of equal importance, as the indications for treatment and the methods employed should be based on them.

The clinical aspects of uterine hemorrhages have usually been discussed from a symptomatic classification; namely, menorrhagia when the menstrual flow lasts too long, is too profuse or occurs too soon, and metrorrhagia if the hemorrhage occurs independently of the menses. Modern gynecology should discard this time worn custom and study disease along functional and structural pathology.

Since the advent of radiation therapy, the impression has been created that radium and x-rays have displaced medical and surgical treatment of gynecologic diseases accompanied by bleeding. It is obvious that each method of treatment has definite indications and limitations, and the indications should not overlap each other.

The treatment of uterine hemorrhages caused by infections, displacements, trauma and malignant disease of the genital organs, and by general constitutional diseases has not been included in this discussion, as the treatment of these diseases has been well standardized and generally accepted.

Hence the presentation of the subject comprises: (1) the classification, etiology and frequency of uterine hemorrhages based on pathologic physiology and anatomy, and (2) the treatment of benign uterine hemorrhages due to functional disturbances of the uterus and ovaries.

The study is based on a survey of 2,184 consecutive hospital records and 2,126 records of outpatients. The latter have been included as they contain ambulatory cases and therefore give a somewhat different numerical survey.

CLASSIFICATION AND CAUSES

Uterine hemorrhages signify either a disturbance of the menstrual flow or a bleeding independent of menstruation. An aberration from the habitual behavior of the menstrual flow must have been existent for some time in a given instance to place such an occurrence in the group of hemorrhages due to mentsrual disturbances.

Menstrual hemorrhages are of uterine and ovarian origin. Uterine disturbances cause a prolongation and profuseness of the menstrual flow which is termed hypermenorrhea. The duration of the flow depends on the contractile power of the myometrium. Contractility is lessened or checked by dystonicity and atonicity

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

resulting chiefly from hypoplasias, asthenias and myomas of the uterus. The latter interfere with the homogeneous and even contraction of the uterine muscle, and the former cause loss of tonicity due to a flabby and weak myometrium. Profuse menses result from an active or passive pelvic hyperemia whereby the amount of blood contained within the blood vessels is increased. Active hyperemia is seen in acute and chronic genital infections, and passive hyperemia in uterine displacements and traumas of the genital organs, constitutional stasis from advanced cardiac, pulmonic, hepatic and nephritic diseases, and severe toxemias mainly from acute and chronic infectious diseases.

TABLE 1.—*Frequency of Uterine Hemorrhage*

	Inpatients		Outpatients	
	Number	Per Cent	Number	Per Cent
Total number of cases admitted	2,184	.....	2,126	.....
Total number of uterine hemorrhages	770	35.29	802	37.71
Division in Groups:				
1. Hypermenorrhea	350	45.45	348	43.39
2. Polymenorrhea	111	14.42	103	12.84
3. Metrorrhagia				
(a) Benign	125	16.23	138	17.19
(b) Malignant	184	23.88	213	26.28

The hemorrhages due to ovarian disturbances are characterized by a shortening in the periodicity of the menses. They are termed polymenorrhea. They may also be associated with hypermenorrhea. The periodicity of the menstrual flow depends on the time duration of ovulation, which averages twenty-eight days. Variations within four days may be deemed normal. If the menstrual flow occurs within a periodicity of less than twenty-four days in persons with a twenty-eight day cycle, the menstrual flow appears too soon. Such polymenorrheas may result from a shortened period of follicle ripening or from a shortened life period of the expelled mature ovum or both. These dysfunctions are either primary or secondary. Primary ovarian dysfunctions occur more frequently at the beginning of menstrual life when the process of ovulation is started and at the cessation of menstrual life when ovarian function begins to ebb, though no age is exempt. Secondary ovarian dysfunctions are due (1) to infections

TABLE 2.—*Frequency of Uterine Hemorrhage, Omitting Malignant Diseases*

	Inpatients		Outpatients	
	Number	Per Cent	Number	Per Cent
Total number of benign hemorrhages	586	25.45	591	27.33
Division in Groups:				
1. Hypermenorrhea	350	59.72	348	58.88
2. Polymenorrhea	111	21.35	103	17.43
3. Benign metrorrhagia	125	18.93	140	23.69

invading or destroying the ovarian parenchyma, and (2) to hyperemias from displacements of the pelvic organs.

The extramenstrual uterine bleedings are called metrorrhagias. The loss of blood may vary from a "spotting" to large amounts. The hemorrhages may be continuous or interrupted and occur at all ages. Metrorrhagia is always due to a proliferation of tissue with loss of continuity of the surface epithelium by rupture, ulceration or necrosis, as occurring in the chronic hyperplasias of the endometrium, acute and chronic infections, extensive erosions and lacerations of the cervix, the accidents of pregnancy, malignant tumors, and so forth.

THE FREQUENCY OF UTERINE HEMORRHAGES

The frequency of uterine hemorrhages in our series is shown in table 1.

The number of malignant diseases is unusually high, probably because the radiation therapy department is under the direction of the department of gynecology. Therefore, more malignancies are referred to our department than is usually the case. The frequency of uterine hemorrhages, not including malignant diseases, is given in table 2.

The benign uterine hemorrhages, therefore, occurred in about one fourth of the cases admitted to the gynecologic department; the hypermenorrheas amounted to about 60 per cent, and the polymenorrheas and benign metrorrhagias each to about 20 per cent.

The hypermenorrheas may be divided into those due to loss of contractility of the myometrium and those resulting from hyperemia. The number and percentages for each causative factor are given in table 3.

It may be stated that the hypermenorrheas due to loss of contractility indicate medical, surgical or radiologic treatment. The hyperemic hypermenorrheas always require medical or surgical treatment. The indications of treatment in the last group are standardized and generally observed by the surgeons. They are therefore omitted from discussion. The menopausal hypermenorrheas comprise cases in which the diagnosis was not certain. In some the uterus seemed to be small and anteflexed, and in others it was long and flabby. They were observed in women after the fortieth year of life.

TABLE 3.—*Hypermenorrheas*

	Inpatients		Outpatients	
	Number	Per Cent	Number	Per Cent
1. Loss of contractility	156	44.56	179	51.46
Myomas	86	24.57	62	17.84
Hypoplasia	27	7.71	56	16.09
Asthenia	25	7.14	46	13.22
Menopausal hypermenorrhea	18	5.14	15	4.31
2. Hyperemia	194	55.44	169	48.54
Infections	144	41.14	92	26.44
Displacements, trauma	42	12.00	67	19.25
Not diagnosed	8	2.30	10	2.85

Infections of the genital tract play the most important part in the hyperemic group, and myomas predominate in frequency in the group characterized by loss of contractility. Hypoplasias, asthenias and displacements have a higher percentage in the outpatients. Those responding to medical and ambulatory treatment were not referred to the hospital.

The polymenorrheas were divided into two groups: the primary and the secondary ovarian dysfunctions. The former are devoid of any structural pathologic condition, as abnormal changes in the maturing follicle and its product, the expelled mature ovum, have so far not been demonstrated by biologic and microscopic investigations. Such dysfunctions are seen oftener at puberty, less frequently during the periods of maturity and the menopause. The frequency of polymenorrheas and the underlying diseases is given in table 4.

Several uterine myomas with polymenorrhea were observed. The frequent menses are probably ascribable to a pronounced pelvic hyperemia or to a cystic degeneration of the ovaries so often associated with myomas. The primary ovarian dysfunctions and the myomas indicate surgical, medical or radiologic treatment. The infections and displacements demand medical or surgical management and never radiation therapy. The infections in this group also form the most prominent causative factor.

The metrorrhagias of a benign origin include as a most important group the hemorrhagic myopathies or chronic glandular hyperplasias of the endometrium due to a persistent graafian follicle. Those occurring at the menopause predominate in frequency and clinical importance, as they must be differentiated from abortions and malignancy. A group of menopausal metrorrhagias has been added. These were found devoid of pathologic changes after a diagnostic curettage. The frequency of the benign metrorrhagias and the underlying causative factors is given in table 5.

The accidents of pregnancy form a large number. A woman with uterine hemorrhages (or amenorrhea) should be deemed pregnant until proved not to be pregnant. There were observed fifteen extra-uterine pregnancies, eight subinvolutions, three hydatid moles, one chorionepithelioma, and thirty-four threatened or incomplete abortions in the inpatients. In the comparison of the percentages in the inpatients and outpatients, great discrepancies are seen. The clinical diagnosis of the causes of metrorrhagia is difficult and the histologic diagnosis frequently reveals diagnostic errors.

TABLE 4.—*Polymenorrhea*

	Inpatients		Outpatients	
	Number	Per Cent	Number	Per Cent
1. Primary ovarian dysfunction	25	31.53	25	33.97
Puberty, up to 20 years	17	15.31	14	13.59
Maturity, 20 to 40 years	10	9.01	9	8.73
Menopause, after 40 years	8	7.21	12	11.65
2. Secondary ovarian dysfunction	76	68.47	68	66.03
Infections	54	48.75	41	39.71
Displacements	12	10.87	16	15.53
Myomas	5	4.43	5	4.97
Not diagnosed	5	4.42	6	5.82

THE TREATMENT

The discussion of treatment will be confined to the benign hemorrhages of a functional character. It will also be limited to the hospital cases, as these could be controlled and followed up. Infections, displacements, injuries and accidents of pregnancy and labor do not require consideration, as the treatment of these conditions is well standardized.

The general rules of treatment are as follows:

1. A woman suffering from a uterine hemorrhage should not be treated until the underlying cause has been determined.

2. All uterine bleeding must be viewed with grave suspicion until it has been proved to be benign. Every woman suffering from uterine hemorrhages should be examined and, if the cause does not become evident, the uterus should be curetted and all scrapings examined microscopically.

3. In the treatment of benign uterine hemorrhages due to functional disturbances the age of the patient must be considered, the cause removed, and normal function of uterus and ovaries reestablished, if at all possible.

The contractility of the uterus is stimulated by ergot, hydrastis, extract of the posterior lobe of the pituitary gland and epinephrine. Ovarian dysfunction indicates extract of the anterior lobe of the pituitary, thyroid, the ovarian follicle and the corpus luteum. Follicular hormone is used during the follicle stage, and corpus luteum extract or female sex hormone during the corpus luteum stage of the ovarian cycle. It is probable that the viability of the expelled ovum depends on a properly functioning corpus luteum. The removal of the true corpus luteum causes death of the ovum and abortion. Hence the life expectancy of the nonimpregnated ovum depends on the corpus luteum. The endocrine extracts should be given hypodermically. Their action is a problematic one, as uniformly good results are not often seen.

General management is important, as diet, regulation of rest and work, exercise in the open air, sun baths or ultraviolet ray treatment. Iron and arsenic preparations are useful. In the married, sexual activities should be regulated, particularly the prevention of conception, which often induces excesses and pelvic hyperemias.

TABLE 5.—*Benign Metrorrhagias*

	Inpatients		Outpatients	
	Number	Per Cent	Number	Per Cent
Chronic Hyperplasia Endometrii with Persistent Follicle:				
(a) Puberty, up to 20 years	2	1.60	3	2.17
(b) Maturity, 20 to 40 years	4	3.20	12	8.68
(c) Menopause, after 40 years	19	15.20	29	21.03
Menopausal metrorrhagia	8	6.40	23	16.67
Accidents of pregnancy	61	48.80	30	21.74
Senile vaginitis	5	4.00	14	10.14
Pelvic infections and trauma	17	13.60	20	14.50
Not diagnosed	9	7.20	7	5.07

If medical treatment fails, curettage of the endometrium is indicated. The procedure stimulates the uterus and ovaries. If curettage does not give the desired result, it should be repeated a second and third time, especially in young women. Very few instances of refractory behavior have come to my attention. Radiation therapy should not be used in the benign uterine hemorrhages of puberty and maturity unless the described treatment has been faithfully carried out and found wanting. Restitution of complete function must be the ideal of treatment.

The menopausal benign bleedings may be treated less conservatively. Diagnostic curettage is invariably necessary to exclude malignancy. Fortunately, about 50 per cent of the benign hemorrhages are thereby arrested. Should the bleeding recur, another curettage must be done and the scrapings again examined microscopically, as the danger of carcinoma always lurks in such cases. The second curettage is immediately followed by the intra-uterine insertion of radium, and a dose of from 1,000 to 1,200 mg. element hours is given. The capsule should be placed at the fundus to avoid erosions near the internal uterine os. Subsequent scar tissue formation might lead to a stenosis with hydrometra or pyometra, a very troublesome occurrence. Radiation therapy has rendered hysterectomies obsolete for the relief of benign functional uterine hemorrhages.

TABLE 6.—*Treatment*

	Surgery		Irradiation		Medicine	
	No.	%	No.	%	No.	%
1. Hypermenorrhea:						
Hypoplasia	9		3		18	
Asthenia	9		7		9	
Menopause	5		10		3	
Total	23	31.54	20	27.59	30	41.07
2. Polymenorrhea:						
Puberty	3		1		8	
Maturity	3		..		2	
Menopause	2		2		9	
Total	8	86.67	3	10.00	19	63.33
3. Metrorrhagia:						
Hemorrhagic myopathy						
Puberty	1		1		..	
Maturity	2		..		3	
Menopause	4		17		1	
Menopausal metrorrhagia	4		4		..	
Total	11	30.55	22	61.10	3	8.35
Grand total	42	30.23	45	32.31	52	37.46

Accordingly, the indications for radiation therapy are as follows:

1. The uterine hemorrhages are benign and have resisted medical treatment and uterine curettage.

2. Carcinoma must have been ruled out by diagnostic curettage and histologic tissue examination.

3. The patient should be older than 40 years.

4. The history and palpatory observations must be free from evidence of prior infections.

A survey of the treatment in this series is given in table 6.

Uterine myomas are new growths and require an entirely different treatment than the purely functional disturbances of the uterus and ovaries. The number of all myomas and the methods of treatment employed are given in table 7.

The indications for radiation treatment were as follows: (1) The myoma must cause bleeding; (2) it should be located intramurally; (3) it should not be larger in size than a three months' pregnancy; (4) it should not be degenerating; (5) it should not cause pressure symptoms; (6) it should not be complicated by other pelvic pathologic conditions, especially infections; (7) the patient should be 40 years of age or older; (8) the patient should be one that does not offer a good surgical risk; (9) the hemoglobin and red blood count should not be abnormally low, that is, 30 per cent

TABLE 7.—*Uterine Myomas*

	Number	Per Cent
Total myomas in the 2,184 inpatients	145	6.14
Myomas with bleeding	90	62.06
Myomas without bleeding	55	37.94
Treated surgically	118	81.30
Treated radiologically	16	11.03
Treated medically	11	7.59

hemoglobin and 2,000,000 erythrocytes, and (10) there should not exist any doubt in the surgeon's mind regarding any of these factors.

Limit of time and space forbid entering into a more detailed discussion. It is evident, however, that the various methods of treatment of benign functional uterine hemorrhages and uterine myomas have very definite indications and limitations.

SUMMARY

1. The foregoing classification and the causation and frequency of uterine hemorrhages, as described, are based on the survey of the records of 2,184 hospital patients and 2,126 outpatients. The number of benign uterine hemorrhages in this series was about 25 per cent of the total cases admitted.

2. The classification and frequency of the types of bleedings was:

(*a*) Hyperemia: The menstrual flow lasts too long or is too profuse. It is due to uterine dysfunction. The frequency is about 60 per cent of the total benign hemorrhages;

(*b*) Polymenorrhea: The menstrual flow occurs too soon. It is caused by ovarian dysfunction. The frequency is about 20 per cent of the total benign hemorrhages.

(*c*) Metrorrhagia: There is a bleeding independent of the menstrual flow. It is the result of the loss of continuity of the surface epithelium by ulceration, necrosis or rupture of proliferating processes within the genital canal. The frequency of the benign metrorrhagias is about 20 per cent of the total benign hemorrhages.

3. A diagnostic curettage and microscopic examinations of all scrapings are necessary in those cases in which (1) a correct diagnosis by physical examination cannot be made, and (2) the hemorrhage occurred in the menopausal period of life.

4. Radiation therapy was indicated in 32.31 per cent of the benign functional hemorrhages and 11.03 per cent of uterine myomas.

25 East Washington Street.

ABSTRACT OF DISCUSSION

DR. EMIL NOVAK, Baltimore: Dr. Schmitz's proportion of functional cases occurring at or near the menopause was somewhat less than we have encountered. Roughly speaking, about one half of our cases of functional bleeding, associated with hyperplasia of the endometrium, have occurred at this age. The importance of this is obvious, because this condition is at once brought into diagnostic conflict with cancer. It is of interest and importance to note that these benign functional cases are really more frequent at the menopausal age than adenocarcinoma of the uterine body, which is the type for which diagnostic curetting must be done. Cancer of the cervix can usually be readily diagnosed by inspection, palpation and biopsy. The frequency of benign hemorrhages at the menopause is also of some importance from the standpoint of cancer education of the public. There is no doubt that a certain number of women, being told repeatedly that bleeding at the time of the menopause is a symptom suggestive of cancer, hesitate about going to a physician for examination for fear of being told that they actually have a cancer. We can tell them truthfully that in a very large number of cases the bleeding will be found to be due to other causes than cancer. Certain mild cases of functional hemorrhage unquestionably correct themselves spontaneously. Other cases are more severe, so that treatment of one form or another is indicated. Organotherapy may be tried, but it is not usually successful. Curettage is often indicated, and in the menopausal cases the indication is doubly strong because of the necessity of eliminating cancer. Curettage in itself will cure a certain proportion of cases, but frequently the bleeding returns, sometimes within a few weeks, sometimes not for many months. In menopausal cases radium is the remedy of outstanding value. In younger women, in spite of the refinements of radiotherapy, there are many cases in which a repetition of the curettage will be preferable to radiotherapy.

DR. WALTER T. DANNREUTHER, New York: It is gratifying to note that a radiologist so skilled and enthusiastic as Dr. Schmitz is still operating in most of his cases of myoma. If one restricts the irradiation of myomas to those tumors complying with the specifications outlined by Dr. Schmitz, the results will be uniformly gratifying. On the other hand, if one irradiates myomas indiscriminately, particularly if the tumors are large and chiefly subperitoneal, the results are bound to be disappointing. It is extremely important in these cases to exclude a coexisting salpingitis before radiotherapy. I have had the misfortune of having peritonitis develop within twenty-four hours in two cases in which I had overlooked a latent salpingitis, or had perhaps been unable to discover it because the tumors were in the way. I go a little further than Dr. Schmitz and widen the scope of the radiation treatment to include some women younger than 40. If one is careful in regulating the dosage and the screenage, these patients can be irradiated by an experienced operator without castration being produced. It it also wise to avoid castration even in married women past 40, for the reason that it will often precipitate rigidity.

DR. GEORGE GRAY WARD, New York: I wish to congratulate the author on the very excellent way in which he has classified the subject and put it before us so that it can be of practical use. I agree with the general observations, statements and principles that he has laid down. I think that they are in accord with what we all meet. Of course, the important thing is that in all these hemorrhages an accurate diagnosis must be made so far as is possible. That is really where the mistakes arise that are sometimes troublesome and are the cause of errors that are made. The question of making the diagnosis by curettage in these cases of bleeding is most important, and I

would wish to stress the fact that in my opinion the operation of curettage is not such a simple operation, and to do it in a way that is sure to cover the entire field, that is, the entire interior of the uterus, and not to miss any tissue requires a knowledge of the exact anatomy of the interior of the uterus. How often we see some one curet just as though he were scraping out an empty bag, without going into the cornua of the uterus. There are extremely narrow angles there, and a full size curet will not reach in those angles. A systematic and thorough curettage must be made in these cases in which it is so important to get the necessary tissue whenever there is a question of diagnosis. I agree with what Dr. Dannreuther said in regard to the question of the age of the patient in the use of radium. We can use radium in patients considerably below 40 if care is exercised. Forty years was laid down by Dr. Schmitz, but I think that many of us have seen cases which have resisted the ordinary repeated curettage and in which we can use radium, without, if we understand its use, overirradiating or causing castration.

DR. HENRY SCHMITZ, Chicago: The preponderance of carcinoma in my cases is entirely due to unusual conditions over which I have no control. A great number of other hospitals in Chicago send their patients with carcinoma to Mercy Hospital because it possesses a fully equipped radium and roentgen-ray therapy department. That also explains why, among these cases of 186 cervical carcinomas, there were only six corpus carcinomas, as the latter are and should be treated with surgery. As far as the myomas are concerned, we were not any more conservative in choosing the cases for radiation therapy than others, as we observed the indications strictly, with the result stated in the paper. The surgical and radiologic work at our hospital is all done in the department of gynecology. After all, the important point is the diagnosis. Whenever a bleeding uterus comes to our attention, an immediate and correct diagnosis should be made. A patient should not be treated unless one knows what disease one is treating, being ever mindful of the possibility of a lurking carcinoma.

Clinical Notes, Suggestions and New Instruments

BILATERAL TROPHIC CHANGES OF THE FEET IN DIABETES *

EVELYN HOLT, M.D., NEW YORK

While rapidly advancing gangrene of the feet is relatively common in diabetic patients, bilateral trophic disturbances are unusual. The latter condition is not mentioned in most discussions of diabetic gangrene, and in studies of trophic disturbances diabetes may or may not be mentioned as a predisposing cause. A case with well marked sensory changes and localized, painless necrosis of both great toes with subsequent healing was recently observed, and is here reported.

REPORT OF CASE

History.—Mrs. L. F., a widow, aged 52, born in Russia of Jewish parents, came to the Cornell Clinic, Jan. 10, 1928, because of diabetes and trouble with her feet. There was no history of diabetes or other chronic illness in her family. She had been in good health and had not had any acute illness or operation. She had had five children, with no miscarriages, and the menstrual periods had been normal up to the menopause at 46 years of age. Twelve years before she had experienced thirst, polyuria and a loss of 30 pounds (13.6 Kg.) in weight. Sugar was found in the urine and a somewhat restricted diet was advised. Thereafter she maintained a constant weight, and the urine was examined at intervals, although she was not under regular medical care. For five or six years she had had occasional pains in the legs, some paresthesia of the feet, and a gradual loss of sensation in the toes. At one time the feet felt cold, but they were never blanched or painful, and had never been burned, frozen or otherwise injured. Four years prior to admission she had had a perforating ulcer under the ball of the left great toe; this was absolutely painless, discharged a little watery fluid, and was present for a year before it finally healed. Two weeks prior to admission she took a Turkish bath and the next morning found that both great toes were "blue and soft." The toes were painless, and the patient continued her usual life for two weeks. During this time the toes remained blue, but the softness disappeared.

Physical Examination.—The patient was well nourished and did not appear ill. Except for the condition of the feet the examination was not of especial interest. The skull and scalp were normal. The eyes were normal; the pupils reacted to light and in accommodation, and the eyegrounds showed evidence of moderate arteriosclerosis. The sense of smell was absent; the nose was apparently normal. The teeth were false. The neck was normal. The heart was slightly enlarged to the left; the rate and rhythm were normal, and the sounds were clear; the blood pressure was 164 systolic and 90 diastolic. The lungs were clear, and the abdomen was normal. The peripheral arteries were palpable but were not markedly thickened; normal pulsation was felt in the popliteal and dorsalis pedis arteries of both legs. Knee jerks and ankle jerks were present and equal; ankle clonus and plantar reflex were absent. There was no sense of touch or pain on the pads of the toes; sensation was slightly diminished over the soles of the feet and markedly diminished over the dorsum of the toes. The toes were warm and of normal color except that the distal half of each great toe was blue, almost black, and the proximal half of these toes was red. The skin was intact but dry, and the nails were thickened and brittle.

Laboratory Examinations.—The urine on admission showed a moderate amount of sugar and albumin; the blood sugar was 214 mg. per hundred cubic centimeters; the blood Wassermann reaction was negative. Later, under dietary treatment, sugar disappeared from the urine and the blood sugar dropped to 187 mg. Roentgenograms of the feet and legs showed very slight evidence of arteriosclerosis, but did show an unexplained calcium deposit in the lower end of the left femur.

Course.—The patient refused hospital care and was sent home on a low calory diet (carbohydrates, 20-25; proteins, 65; fats, 45) with instructions to keep the feet elevated, warm and very clean. The diet was later increased to carbohydrates, 60; protein, 65, and fats, 125. January 13 there was a dark bulla on the tip and under surface of each great toe; the toes were warm and the area of discoloration had not increased. January 20, the condition was the same, but on January 27 there was increased softening and moisture with serous discharge at the tips of the toes and under the nails. The patient then had a severe respiratory infection which confined her to bed and she was not seen again until February 17. At this time her toes appeared much better; there was no moisture or cyanosis, but just a small, black, dry, necrotic crust on the tip of each great toe surrounded by an area of erythema. A week later the necrotic crusts had separated, leaving patches of very delicate skin. Later a smaller area of softening appeared on the right toe, but by March 16 both toes were covered by intact skin and there was no evidence of discoloration or softening. At this time there was a partial return of sensation, the patient being able to appreciate light touch everywhere except on the inner surface of each great toe and on the pads of the second and third toes. The feet have remained in this condition for four months.

COMMENT

The case here reported differs from the usual case of diabetic gangrene in several striking respects. Here the trouble was bilateral and symmetrical. The toes which were cyanotic, with areas of black necrotic softening and serous discharge, regained normal color and intact epithelium within three months. Analgesia and partial anesthesia, as well as changes in the nutrition or in the skin and nails, were present. Pain was absent at all times, and later there was a partial return of sensation. The improvement in the feet was not the result of a marked lowering of the blood sugar, nor was it due to skilled surgical care. The patient cared for herself and kept her feet warm, clean and dry all the time, and elevated for the greater part of the time.

* From the Clinic of Cornell University Medical College.

To explain the complete and relatively prompt healing one must assume that there was a fairly good circulation and that the trouble was not due to arteriosclerosis alone. In view of the sensory changes and of the changes in the nutrition of the skin and the nails, it seems likely that the gangrene was trophic in nature.

56 East Eighty-Ninth Street.

UNUSUAL INCREASE OF CARBOHYDRATE TOLERANCE IN A CASE OF JUVENILE DIABETES

E. R. BLAISDELL, M.D., PORTLAND, MAINE

History.—H. C., a girl, aged 11, was admitted to my clinic, Sept. 12, 1926, in diabetic coma. The family and past history were unimportant. The present illness began two weeks before admittance, at which time the child's mother noticed that she suddenly began to drink large amounts of water and to have a craving appetite. This was soon followed by loss of weight, lassitude and irritability, and two days before admission she began to get drowsy and could not get out of bed on account of weakness. The family physician was called the next day and referred her to the clinic.

The child was in deep coma and appeared emaciated. Her breathing was of the Kussmaul type and there was a heavy odor of acetone. The temperature was 99 F.; the pulse, 125. The eyeballs were very soft and the mucous membranes of the mouth and throat dry. There was sordes on the teeth and gums. The abdomen was distended with gas. The urine showed 5 per cent sugar, a heavy trace of acetone and diacetic acid, a heavy trace of albumin, and many hyaline casts. The blood sugar was 300 mg. per hundred cubic centimeters two hours after the first dose of insulin. (The blood specimen taken on entrance was accidentally destroyed.) There was a heavy trace of acetone in the blood plasma.

Treatment and Results.—Fifty units of insulin and an enema were given at once. Physiologic solution of sodium chloride was administered subpectorally and digifolin subcutaneously every four hours. The patient received 240 units of insulin during the first twenty-five hours. Six hours after the first dose of insulin, she was able to swallow and orange juice was given at regular intervals. Fluids were then forced. On the morning of the second day a low protein, low fat, high carbohydrate diet was started. This was gradually increased and on the eighth day she was receiving 70 Gm. of protein, 80 Gm. of carbohydrate and fat enough to make 1,600 calories, with 71 units of insulin daily. She was up and around her room. The urine was normal. She was discharged, Sept. 30, 1926, on a diet of 70 Gm. of protein, 80 Gm. of carbohydrate and fat enough to make 1,800 calories, with 53 units of insulin daily. The fasting blood sugar was 133 mg. Her weight was 92 pounds (41.7 Kg.). Instructions were given in regard to the decrease of insulin if reactions should appear.

Progress After Discharge.—Frequent follow-up letters showed a gradual reduction in the insulin requirement. In October of the same year the patient was taking 32 units daily. She was seen again in December. The urine was sugar free, the fasting blood sugar was 110 mg. and the insulin requirement was 26 units daily. She was feeling well and was going to school. The patient continued to have slight reactions and the insulin was decreased accordingly until Jan. 8, 1927, when she was down to 2 units daily. The insulin was then discontinued and the urine continued sugar free. March 8, 1927, the fasting blood sugar was 110 mg. without insulin. Sept. 1, 1927, the blood sugar was 135 mg. fasting and the urine showed a slight trace of sugar. She admitted a break in diet two days before. Four units of insulin was given daily for one week. This cleared up the sugar in the urine and she has remained sugar free on the same diet, without insulin, since that time. July 26, 1928, the fasting blood sugar was 120 mg. and her weight was 105 pounds (47.6 Kg.). The diet remained the same. The patient is very active both mentally and physically. During the past year, she has been at the head of her class in high school and has played on both the volley ball and basket ball teams.

COMMENT

A child, 11 years of age, showing symptoms of diabetes for only two weeks, goes into coma and is saved by large doses of insulin. A few months later she is able to discontinue the insulin on an 1,800 calory diet, containing 80 Gm. of carbohydrate. After one and a half years she is still sugar-free with a normal blood sugar, without insulin. What is the explanation of this unusual occurrence? Research workers have shown that insulin, when given early to depancreatized dogs, halts hydropic degeneration in the cells of the islands of Langerhans. In this case the disease was apparently of such a short duration when coma occurred that very little destruction had probably taken place in the islands of Langerhans, and a large percentage of their cells were given an opportunity to regenerate.

12 Deering Street.

Special Article

TERMS USED IN RADIOLOGY

RECOMMENDATIONS OF THE SUBCOMMITTEE ON NOMENCLATURE *

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PHILADELPHIA
GIOACHINO FAILLA, D.Sc.
NEW YORK
AND
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1. The term "radiology" should be employed to designate the broad subject of the medical use of roentgen rays in diagnosis and treatment and of radium in treatment.

2. The individual engaged in such work should be designated as a "radiologist," when he employs these agents as a specialist in this particular branch of medicine. (Note: The terms "radiology" and "radiologist" have not been employed in any other sense by any other group of individuals up to this time, nor do they seem likely to be in the future.)

3. The main objection to the terms "roentgenology" and "roentgenologist" is that they do not include or imply the use of radium or other radioactive substances. Moreover, "radiology" and the necessary derivatives of the prefix "radio" are more euphonious.

4. Under the term "radiology," as a subject or a branch of medicine, might still be retained or included the designations of a subgroup, "roentgenology" and "roentgenologist," to include those individuals who practice only the diagnostic application of roentgen rays as a specialty.

5. There are many individuals who practice only the therapeutic application of roentgen rays and radium. To conform with recommendation 1, these persons could be designated as "radiotherapeutists" or "radiotherapists" and their line of work as "radiotherapy" or "irradiation therapy." There are practically no individuals who now employ either radium or roentgen rays to the exclusion of the other and remain specialists in this line of work. For example, many gynecologists use radium themselves, but they remain gynecologists. Few, if any, who employ roentgen rays in treatment

* Read before the Section on Radiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

as a specialty do so in these days without also using, themselves, or having recourse to the use of radium when appropriate occasions arise.

6. Nevertheless, the use of either agent alone must be designated as roentgen therapy or radium therapy, respectively, for descriptive purposes or in defining or directing treatment.

7. The use of ultraviolet, infra-red or sun rays would be included under "radiotherapy" when an individual employs radium and roentgen rays in addition, but this term is not applicable to the use of ultraviolet, infra-red or sun rays alone to the exclusion of the other agents. We do not suggest any designation for the use of these rays alone, and, furthermore, there are few if any individuals who use them outside the practice of radiology except in connection with other branches of medicine.

8. "Fluoroscope" and "roentgenoscope" may be regarded as synonymous terms and the use of this device may be designated as either "fluoroscopy" or "roentgenoscopy." We regard it as an undesirable policy to eliminate the former term when common usage has made it correct.

9. We strongly recommend the use of the prefix "roentgen" in all connections with all direct references to the sole use of x-rays, with the exception as stated in paragraph 3. The term "roentgenogram" is compulsory because that of "radiogram" is now employed to designate a message transmitted through space and should not be used in a medical sense. "Roentgenograph" should not be used as a noun as is "photograph," but it will probably have to be adopted as a verb to designate the examination of a patient by the making of roentgenograms. It is an undesirable word but the adoption of "radiograph" is unwise, first, because it conflicts with a standard nomenclature, and, secondly, because it is likely to be adopted in the future in connection with the radiotransmission of pictures. Other derivatives of the prefix "roentgen" would be "roentgen therapy" (paragraph 6), "roentgenology" and "roentgenologist" (paragraph 4) and "roentgen diagnosis."

10. The choice between "roentgenologic" and "roentgenological" seems to be largely a whim of editors, just as are pathologic and pathological. We recommend the former when either is necessary as an adjective. As "roentgen therapy" is preferable to "roentgenologic therapy," so we prefer "roentgen diagnosis" to "roentgenologic diagnosis." As "roentgen" is being advised as a prefix, it seems unwise to combine "ray" with it. For example, "roentgen diagnosis" and "roentgen therapy" seem more logical than "roentgen-ray diagnosis" or "roentgen-ray therapy." Somewhat similarly, "roentgenologic aspect" seems preferable to "roentgen-ray aspect."

11. We recommend that the prefix "roentgen" be adopted to English spelling as here written. As has become customary with similar words derived from proper nouns, as volt, ampere and ohm, the prefix "roentgen" should not begin with a capital letter except as the first word in a sentence. Similarly, x-ray should begin with the small letter x. At the beginning of a sentence, x should be the capital letter as in any other hyphenated word.

12. The terms "high voltage," "medium voltage" and "low voltage roentgen therapy" are preferable to deep, medium and superficial roentgen therapy.

13. The words "radiation" and "irradiation" are not synonymous. The former applies to the radiant energy emitted by the x-ray tube, and radium or other radioactive substances as well as some other sources. "Irradiation" refers to the application of these agents. For example, an x-ray tube radiates roentgen rays, and a radiologist employs the rays in the irradiation of a patient during treatment. The verb "irradiate" implies such application and should be limited to the therapeutic application, and not employed to designate the diagnostic use of roentgen rays.

14. Certain undesirable terms are fast coming into common use, mainly through those outside our specialties. Individuals who employ them constantly in conversation and requests are apt to apply them in their writings also; hence the habit should be discouraged. The word "x-ray" should not be used as a verb, as, for example, a request to "x-ray a patient." An examination after an operation is frequently designated as an "after ray."

15. The use of the word "x-ray" should, in a broad sense, be limited to its application to physical problems and to apparatus, as the "x-ray tube" and "x-ray apparatus." The latter term is applicable to the entire equipment, including the tube. The term "x-ray machine" is sometimes employed but is misleading. Strictly speaking, it applies to the transformer, rectifying switch, filament transformer and controls. It is proper to speak of "x-ray waves" or impulses and not to use the prefix "roentgen."

16. The singular form (x-ray) should be used as an adjective, as x-ray tube, and the plural form (x-rays) as a noun to indicate the radiant energy emitted by the x-ray tube. One should never state, for example, that "the x-ray has many practical applications," but, rather, "x-rays have many practical applications."

17. There are certain preferable terms applicable to equipment. Transformer or high potential or high tension transformer are proper and synonymous terms. The term "generator" usually applies to a revolving piece of machinery driven by power and is not synonymous with "transformer."

18. Terms applicable to radium: Milligram and milligram hours are terms applicable to the use of the element. Millicurie and millicurie hours are terms applicable to the use of radon. Radon is the generally accepted term applicable to what was formerly called radium emanation. Seeds was a term applied to small radon tubes used for permanent implantation but should be discarded. Bare tubes was a term applied to the small glass tubes used for this purpose and is not correctly descriptive and is not advisable; but, as glass implants are going out of use, the term will probably be dropped. "Implants" should be applied to the small tubes containing radon which are embedded in tissues with the purpose of having them remain indefinitely. Gold or platinum or even glass radon implants are the terms recommended. Radium or radon needles are hollow pointed applicators containing the element or radon and intended for temporary embedding and subsequent removal.

Two applicators known as the radium or radon pack and tray are unfortunately designated by confusing terms. It would be wiser to use one of them, in lieu of a better term, and designate it by size and distance, as, for example, the large or the small, 10 cm. or 3 cm. pack.

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SATURDAY, SEPTEMBER 29, 1928

VITAMIN A DEFICIENCY AND INFECTION

In biology, theories of modes of action are usually evolved on the basis of facts. Indeed, fact collecting is one of the early stages through which any science develops, and the current character of investigation in a given field is a fairly definite index of the degree of progress made up to that time. In nutrition the relatively brief history of the evolution of the vitamin hypothesis affords a good illustration of the foregoing principle. The definite postulate that accessory food substances existed was made in the first decade of the present century, and much of the research since that time has been devoted to gathering what might be called rather elementary facts. Extensive investigation has been made of the distribution of these poorly defined food factors; later the chemical characteristics were studied; then came the determination of the effects on various species of animals resulting from known vitamin deficiencies, and recently, on the basis of the accumulated facts, attempts have been made to define the mode of action of these obscure potencies.

As the far-reaching effects of patent vitamin deficiencies have become familiar, efforts have been made to correlate them in a general way with pathologic conditions of better known etiology. Thus the susceptibility to infections of various kinds as affected by the adequacy or deficiency of diet with especial reference to the vitamins has attracted renewed interest. Rickets is so obviously a disease associated with defective calcification of growing bones that one is surprised to learn that an increased susceptibility to tuberculosis has been shown in rachitic rats, a species normally possessing a marked immunity to such infection.[1] A more recent experimental demonstration of a somewhat similar nature has been made by Sherman and Burtis,[2] who, with the knowledge of the characteristic susceptibility to infection induced by a ration lacking vitamin A, have studied the long delayed effects of a mild deficiency of this food factor "no greater than may readily occur within the range of ordinary normal or adequate nutrition."

Two large groups of rats were taken when 4 weeks of age, one reared up to that time on an adequate ration with a safe margin of vitamin A, the other group reared on a similar complete food but with less of the fat-soluble factor. All of these animals were then depleted of the vitamin A which they had stored by being given for a month a food free from this factor. Both groups were then fed for eight weeks on a diet containing a limited concentration of vitamin A. At the end of the experiment, autopsies were made and the incidence of infection was determined in all the rats. In the first group this was 25 per cent; in the second, 75 per cent. The only difference between the two groups was the dietary treatment of the mother and young up to the time of weaning, one series having plenty of vitamin A, while the other was somewhat limited in its supply. One may conclude from the investigation that a relative deficiency of this dietary essential in infancy exerted a lasting deleterious effect on the organism.

The similarity in the nutrition of the rat and of man permits these results to be translated into human age relationships. One finds here an index of "differences in incidence of infection to be expected among children of around 10 and 12 years, resulting from differences in the way they were fed before they were 3 years old." We have been so prone to agree that "the child will outgrow" this or that abnormality that statistical data of this kind are likely to prove a shock to our complacency. One is impelled, therefore, to take stock again of the infant's nutritional regimen lest the quantity as well as the quality of the dietary essentials be slighted. The body possesses a large factor of safety structurally and functionally, but the newer observations emphasize once more its absolute dependence for certain fundamental requirements on the environment.

1. Grant, A. H.; Suyenaga, B., and Stegeman, D. E.: Am. Rev. Tubere. **16**: 628 (Nov.) 1927. Grant, A. H.; Bowman, J. A., and Stegeman, D. E.: Ibid. **16**: 642 (Nov.) 1927.
2. Sherman, H. C., and Burtis, M. P.: Proc. Soc. Exper. Biol. & Med. **25**: 649, 1928.

THE REFORMATION OF THE CORONER'S OFFICE

The National Research Council has rendered a notable service in the interest of criminal justice by its investigation into the functioning of the office of the coroner in the United States.[1] The coroner must determine from medical and legal points of view the causes of death in cases coming within his jurisdiction, and take such action as the circumstances demand. As a minor function the coroner acts as sheriff when that officer is disqualified by his personal interest in the outcome of a case or is otherwise incapacitated. In the determination of the cause of death, medicine and law are intimately intermingled. The coroner must establish not merely whether or not death resulted from violence but, if it did result from violence, whether the

1. Schultz, O. T., and Morgan, E. M.: The Coroner and the Medical Examiner, Bull. 64, National Research Council, Washington, D. C., 1928.

deceased or some other person was responsible. If the deceased is concerned the coroner must distinguish between accident and suicide. If another person is involved, the coroner must determine whether the cause of death was criminal, as murder or manslaughter; excusable, as killing in self-defense or through unavoidable accident; or justifiable, as killing in the performance of a lawfully imposed duty to kill. A coroner with a knowledge of law, provided with adequate medical aid, might satisfactorily determine the causes of death, as required by the duties of his office. A coroner medically equipped and with adequate legal aid might do likewise. A layman, without knowledge of either law or medicine, can succeed only by turning the administration of his office over to one or more competent technical assistants and submitting himself to their direction. Thus he becomes a useless appendage to the office. It follows that professional qualifications should be required of the coroner or that the duties of his office should be adjusted so as to impose them on officials having such qualifications.

But the coroner system cannot be perfected by requiring only that the coroner be professionally qualified for his duties. As long as the office is elective, doctors of medicine who are qualified to discharge the duties of coroner will not willingly engage in political campaigning every few years to get and to keep the office. Moreover, the people can scarcely be depended on to make a wise choice from among professional candidates. Obviously their scientific qualifications must be inexplicably intermingled with questions concerning their political availability, the personal and political availability of candidates for other offices, and party policies, all presented on the same ballot. A politically elected medical coroner finds himself confronted with embarrassing questions of political patronage. His personal and professional conscience is constantly tantalized by demands from his political associates and backers. One day he is asked to omit an autopsy for the sake of the family of the deceased or to accommodate a politically important undertaker. Then comes a request to falsify his statement of the cause of death in order that the family of a deceased political henchman may have the benefit of the workmen's compensation act, to which they might not be entitled if the truth were told. To save the fair name of some one who has died from criminal abortion or from suicide, and to protect the family from the stigma attached to such a circumstance, he is asked to suppress information. Sometimes his aid is sought to give the family of a deceased person the benefit of an insurance policy that covers death by accident, or to enable the insurer to escape liability under a policy that does not cover suicide. While the motives that may tempt a coroner to juggle with the orderly administration of the affairs of his office and with its records may have a political origin, monetary considerations may enter into such transactions, politics serving merely to embolden the wrong-doers by giving them an assurance of protection if discovered. All things considered, as long as the office of coroner is an elective office its duties will be unsatisfactorily performed. Any professional qualifications that may by law be imposed on candidates for election and incumbents of the office serve only to mitigate the evils of the situation.

Readjustment of the coroner's functions should be formulated with regard to the duties of the prosecuting attorney. The witnesses—except medical experts—who appear before the coroner are ordinarily only those whom the police make available and whom they may make available later to the prosecuting attorney. Obviously, much work is thus duplicated. However, the coroner works in the open; the work of the prosecuting attorney is in secret until after submission of the case to the grand jury. The publicity of the coroner's work may sometimes hinder the activities of the police and the prosecuting attorney. It affords, however, to the family of the deceased and the party who may be charged with liability for the death opportunities to learn the facts of the case and the identity of witnesses, and it thus contributes to the ends of civil justice. The desirability of maintaining some method of preserving this useful by-product of the procedure of the coroner's office and the necessity for providing a ready substitute for the sheriff seem to be the only substantial obstacles in the way of the transfer of all the nonmedical duties of the coroner to the prosecuting attorney, and the conversion of the office of coroner into a purely medical office.

The purely medical duties of the coroner's office are identical with those now discharged by "medical examiners," who in some places have already replaced coroners. Whether it is worth while to contend that the title of the office be changed to "medical examiner" is debatable. Medical examiners have functioned well in some places, not because they were called "medical examiners" but because the law has insured the appointment of adequately qualified men and has given to the appointees authority and facilities for the performance of their work, reasonable tenures of office, and a reasonable, if not a liberal, wage. If the same safeguards are thrown about the office of coroner and the office stripped of all but medical functions, equally good results seem probable. Practically it may be easier to reorganize the office of coroner than to substitute a new office for it. In some states the office of coroner is established by the state constitution and can be abolished only by amending the constitution. Even where this obstacle to reform exists, it may be possible to reorganize the functions of the coroner's office in a way that will bring about promptly the desired results, although it might take years to accomplish the same results through the slow process of constitutional amendment. Such problems as these must be worked

out in each state before the reform that is so urgently needed can be written into the statutes and thus made permanent. The movement that has been begun by the National Research Council must not be allowed to lapse. For the present the medical profession can do much to promote the efficiency of the coroner's office if physicians will use their influence to see that the best qualified available candidate is nominated and elected.

AN ENCOMIUM ON THE EGG

Milk and eggs play comparable parts in the economy of nature. They serve as the sole sources of nutriment to certain types of developing organisms at a period when almost all tissues are experiencing a rapid growth. It might be anticipated, therefore, that each of these biologic products contains a notable complement of the various nutrient factors that are essential to the growing organism. This involves not merely sources of energy like the fats and carbohydrates, indispensable nitrogenous precursors of the production of proteins, and the essential body components of an inorganic sort, but also the as yet less tangible requisites represented by the various vitamins.

The significance of milk in human nutrition beyond the stage of infancy is becoming adequately recognized. Its growing popularity is reflected in the increasing sales of fluid milk. The per capita consumption in New York, for example, in 1926 was 139 quarts, or 39 per cent higher than fifteen years earlier. The United States now harbors more than 22,000,000 dairy cattle—an equivalent of one cow for every five persons. The substantial value of milk has been demonstrated by numerous experiments and heralded by incessant propaganda. Mrs. Rose has well described it as a stabilizing factor in the human dietary; it supplies some portion of many essentials, and thus tends to prevent any serious shortage that a ration devoid of milk might more readily exhibit.

The merits of the hen's egg in a similar respect have lately been substantiated experimentally by Rose and McCollum [1] at Teachers College, Columbia University. Earlier studies with a group of young children [2] had indicated that the addition of an egg a day to a diet that appeared to be adequate resulted in improvement in general health and in the hemoglobin content of the blood. The newer tests were conducted on a species—the albino rat—comparable in many respects, as to its nutritive needs, with the human species, yet having a life span so adjusted that two and one-half years in the life of a child corresponds to a single month in the case of the animal. Such investigations are highly desirable because at present there is no available criterion of the nutritive value of a diet except the biologic test. In Rose and McCollum's experiments the incorporation of egg equal to only 3 per cent of the total calories—in this case representing about an egg a day for a child—resulted in improvement in well being such as more liberal use of milk promotes. The New York investigators started with a diet already proved to be efficiently utilized and adequate for growth, and were surprised to find the egg diet not only more economically used for growth, as shown by gains in weight per thousand calories consumed, but also resulting in greater growth of the young. Their studies afford further evidence, as they conclude, of the possibility of improving a diet which is adequate for growth, and the usefulness of animal experimentation in finding optimal food combinations. Once again is demonstrated "the importance of milk and eggs as staple foods for the production of a vigorous race."

1. Rose, Mary S., and McCollum, E. L.: Studies in Nutrition: II. The Effect of Adding Egg to a Diet Already Adequate, J. Biol Chem. **78**: 549 (July) 1928.
2. Rose, Mary S.: The Influence of Prolonged Administration of Egg upon the Hemoglobin Content of Children's Blood, J. Biol. Chem. **64**: xx (Feb.) 1925.

SURGICAL LIABILITIES AND THE DANGERS OF BRAIN PUNCTURE

Long hollow needles by which slender cylinders of tissue are removed for study are inserted in various directions and sometimes to great depths in the brain, before and after decompression operations. By examination of the tissue microscopically, diagnosis of the disease is often correctly made. Brain puncturing is also done for radioscopic ventriculography and for other purposes. These measures are usually to determine and aid subsequent intracranial surgical operations. Serious consequences and even death occasionally follow these exploratory ventures. No doubt the desperate condition of the patient demands his exposure to the risks; however, only those with broad experience in neurologic surgery possess any competent appreciation of the dangers of puncturing the brain. The information available is restricted within narrow circles, since most published reports are devoted to surgical triumphs rather than to unfortunate outcomes or to mortality.

The state of affairs here discussed need not be considered as applying exclusively to puncturing the brain as an aid to diagnosis. The length of time required for the medical profession at large to become acutely conscious of the indications and contraindications for many other operations has generally been too long. Indeed, one of the great problems of medical practice is the length of time required for new information to filter into the hinterlands of the medical profession. Emergeny operations always have been and always will be required in outlying districts. In some measure the public must always deal with an inaccessibility to surgical skill such as alone may prove effective. To such difficulties there is added the burden of a dearth of exact information of the liabilities of surgery as practiced by leaders with all modern facilities. As a consequence of these shortcomings, it is natural that a sense of approval is aroused whenever careful studies appear of the conditions that have caused surgeons their

greatest anxiety, bitter disappointments and failures. The courage and humanity exhibited in opening for others records of mistakes and calamities with suggestions for their avoidance serve to remind us that "spirits are not finely touched, but to fine issues." And the gratification provoked by publications of investigations of this order is usually keen because they commonly are from the élite among the surgeons, men replete with experience.

For these reasons, commendation in this place is clearly indicated for the thoughtful review by Heymann [1] of the dangers of brain puncture. Among other dangers he considers sudden huge intraleptomeningeal hemorrhage; disease of the cerebral vessels; the ease with which bleeding occurs from the brain tissue about foreign bodies, tumors and abscesses even when no large vessel is injured; the explosive hemorrhage following puncture of tumors; the accentuation of symptoms present before puncturing, and hemiplegia from the acute localized edema which follows a sudden relief of pressure on the internal capsule. Serious symptoms seldom follow puncture of the brain through practically intact craniums. When decompression was made of one brain by the customary resection of a bone flap, a profuse arterial hemorrhage occurred from needle wounds made three days before. Monoplegias from local edemas may occur when the edematous and punctured regions are far apart.

Heymann's desire to make all these matters plain is extended to descriptions and illustrations of the brains and what was found by Westenhoeffer, who made the postmortem examinations. There are, however, no accounts of the large hemorrhages that distend all the ventricles and cause speedy death when vessels of the choroid plexus are wounded inadvertently by punctures. This outcome is by no means unknown, but unfortunately there is no way of obtaining any fair index of its frequency. Emphasis is given by the author to the greater ease with which bleeding takes place from the brain when there are generalized infections either within the cranium or in the body as a whole, and toxins have modified the integrity of the walls of small blood vessels. He refers to observations made by others of this result of infection, in the disposition to hemorrhage from the needle wounds of lumbar punctures. The treatment of these and of numerous other phases of the subject denote a great experience. Immeasurable benefits would accrue to the younger generations of surgeons and a more correct idea of the limitations of operative measures would be available, if more eminent surgeons would review, in the light of later knowledge and improvements in technic, their practices of previous years. No large or unusual vision is necessary to realize that such presentations would add to rather than diminish the prestige of their authors.

1. Heymann: Ueber den diagnostischen Hirnstich und seine Gefahren, Der Nervenarzt **1**: 27 (Jan.) 1928.

Current Comment

OLIGEMIA AND ANHYDREMIA

Certain types of nutritional disturbances in infancy are characterized by the occurrence of dehydration. Details regarding the symptoms as well as the physical and chemical changes in the blood have been considered in this country by Marriott [1] and his co-workers at St. Louis in particular. In many of the instances there is an unmistakable anhydremia, involving an increased viscosity of the blood and altered blood flow with consequent interference with the usual circulation in the tissues and the exchange of the respiratory gases. A recent study in the Department of Pediatrics at the Medical School of Harvard University by Darrow and Buckman [2] indicates that in not a few instances of so-called dehydration in infants the characteristic condition is that of oligemia or diminution of plasma volume. Sometimes the concentration of crystalloids is only slightly affected by the volume change; and with clinical improvement the plasma volume increases again. Changes in the concentration of the red cells by no means always reflect accurately the variations in the plasma volume; furthermore, the serum protein concentration also is not always a trustworthy index of dehydration or water retention or of changes in blood volume. The Boston pediatricians suggest that such factors as rate of blood flow, basal metabolic rate, and the capacity of the blood to absorb water as it passes from arterial to venous surroundings may be important factors in determining the absorption of water from the gastro-intestinal tract in patients with dehydration, or from the tissues in persons with water retention. The volume as well as the concentration of the blood now demands clinical consideration.

VITAMIN B CONTENT OF ARTIFICIALLY (ETHYLENE) RIPENED CELERY

About a year ago the editorial columns of THE JOURNAL [3] called attention to the employment of ethylene for the artificial ripening of fruits and certain vegetables, such as tomatoes and celery. THE JOURNAL took the attitude that the vitamin content might not be as rich in ethylene-ripened as in untreated products, particularly in the case of such vegetables as the tomato. This note was reflected in an article in *Science* for Sept. 30, 1927. The following excerpt will refresh the reader's memory:

> The food value of the tomato, ripened by the application of ethylene gas rather than through natural agencies, is under question by the American Medical Association. During the last three or four years the use of ethylene gas to ripen fruits and vegetables . . . has increased by leaps and bounds. . . . The American Medical Association points out that while this development is of vast importance commercially, the health phases of the question have as yet received little attention.

1. Marriott, W. M.: Anhydremia, Physiol. Rev. **3**: 275 (April) 1923; Some Phases of the Pathology of Nutrition in Infancy, Am. J. Dis. Child. **20**: 461 (Dec.) 1920.
2. Darrow, D. C., and Buckman, T. E.: The Volume of the Blood: II. The Volume of the Blood and Concentration of Crystalloids and Electrolytes in Dehydration and Edema, Am. J. Dis. Child. **36**: 248 (Aug.) 1928.
3. Artificial Ripening of Fruits by Ethylene, editorial, J. A. M. A. **89**: 792 (Sept. 3) 1927; Artificial Coloration of Citrus Fruits, ibid. **89**: 1875 (Nov. 26) 1927.

Certain fruits and vegetables are recommended by physicians largely because of their vitamin content; whether or not this has been altered by ethylene has not been determined.

Using the foregoing excerpt to express his problem, M. F. Babb,[4] working in the University of Maine, has communicated to *Science* the results of his recent experiments. He states that these indicated that ethylene used in blanching celery may not exert any effect on its vitamin B content. Young rats of the same litter were paired closely as to weight and placed on a standard vitamin B-free ration. Ethylene and board-blanched celery, for comparison, were fed in known quantities apart from the basal ration, and check animals from each litter were maintained. In the case of celery, the ethylene is employed mainly for blanching. According to Babb, the results indicated that, under the conditions of the experiment, the treatment is not injurious to the vitamin B content of celery. The data have not been published but will undoubtedly be forthcoming. In the meantime it would be profitable to know whether the same results would be obtained in the case of the tomato artificially ripened by ethylene, whereby its exposure to the rays of the sun is shortened, and also whether or not the artificial coloration of oranges by ethylene affects the amount of vitamin.

4. Babb, M. F.: The Effect of Ethylene upon the Vitamin B Content of Celery, Science, Sept. 7, 1928, p. 231.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Mr. Blasingame Resigns.—Mr. W. C. Blasingame, for about ten years director of the bureau of venereal disease control of the state department of health, has resigned to accept a position as director of the bureau of citizenship in the extension department of the University of Alabama at Tuscaloosa.

Dr. Cannon Appointed Acting State Health Officer.—At a meeting of the state committee on public health, August 29, the chairman announced that Dr. Douglas L. Cannon, Montgomery, had been appointed acting state health officer with full authority until further notice. Dr. Cannon has been an assistant of the late Dr. Samuel W. Welch, who was state health officer of Alabama for many years. A permanent appointment will probably be made this fall.

CALIFORNIA

Blood Transfusions for the Poor.—About fifty persons recently contributed more than $1,000 to insure an orphaned, 8 year old boy treatment for Hodgkin's disease at the University of California Hospital, San Francisco. The patient has already received five transfusions, each of which cost from $25 to $50, and his condition has considerably improved. It is expected that this measure will lead to sufficient improvement to permit treatment later by means of the roentgen ray. Eventually a large fund will be needed for blood transfusions for destitute patients. The hospital is supported in part by the state, but there is no fund to provide donors for blood transfusions.

Lane Medical Lectures by Professor d'Herelle.—The twenty-first course of Lane Medical Lectures will be delivered at Lane Hall, Stanford University School of Medicine, Sacramento Street near Webster, San Francisco, October 22-26, at 8:15 p. m., by Dr. F. d'Herelle, professor of bacteriology, Yale University School of Medicine, Connecticut, and until recently of Alexandria, Egypt. Physicians, medical students and others interested are invited. The titles of the lectures to be given are:

"Bacteriophagy," October 22.
"Bacterial Mutations," October 23.
"The Nature of the Bacteriophage," October 24.
"Infectious Diseases," October 25.
"The Phenomenon of Recovery," October 26.

Society News.—The University of California Medical School will sponsor two public motion picture films at the University Hospital, Fourth and Parnassus avenues, San Francisco, October 8, to be exhibited by Robert J. Ruth of E. R. Squibb and Sons. The subjects will be "Sunshine from the Sea" which presents the subject of cod liver oil. The second, "How Science Aids in Controlling Infectious Diseases," will depict methods employed in the manufacture and control of biologic products.——The San Diego County Medical Society was addressed, September 11, by Dr. Samuel Ayres, Jr., Los Angeles, on "Some Phases of Dermatology."——The Pacific Physiotherapy Association was addressed, September 26, at the Hollywood Hospital, Los Angeles, by Dr. Clinton D. Hubbard, Huntington Park, on physical therapy in Europe.

CONNECTICUT

Illegal Practitioners an Expense to the State.—The state of Connecticut has been to much expense in bringing to judgment some of its illegal practitioners of medicine. The state department of health cites the cases of Gerald A. Richardson, Bridgeport, and Bernard I. Kafka, Stamford, whose licenses were revoked. Richardson carried his case to the supreme court of errors; Kafka signed a stipulation that he would be bound by the results of the Richardson appeal. The superior court dismissed the appeal, the state supreme court confirmed the judgment of the lower court, and they carried their appeal to the U. S. Supreme Court on the basis of the unconstitutionality of the Connecticut law. They started to practice again and were arrested, were tried, and lost; they appealed again to the Connecticut State Supreme Court of Errors. The final judgment prohibits them to practice in Connecticut. The state department of health revoked their licenses on the advice of the eclectic examining board in 1924.

DELAWARE

State Medical Meeting and Election.—At the annual meeting of the Medical Society of Delaware, September 11-12, Dr. William O. La Motte, Wilmington, was made president for 192 .; Drs. Clarence J. Prickett, Smyrna, and Kendall J. Hocker, Millville, vice presidents; Dr. James E. Brayshaw, Wilmington, secretary; Dr. Samuel C. Rumford, Wilmington, treasurer, and Dr. George W. K. Forrest, Wilmington, delegate to the American Medical Association. The guest speakers were Drs. Arthur C. Morgan, on "Treatment of Acute Cardiac Tragedies"; Gabriel Tucker, "Bronchoscopy as an Aid in Diagnosis and Treatment of Asthma"; Orlando H. Petty, "Emergencies of Diabetes and How to Treat Them," and Charles F. Nassau, "Treatment of Goiter"; these speakers were from Philadelphia. Dr. Joseph C. Bloodgood, Baltimore, discussed "Lesions of the Stomach."

ILLINOIS

Personal.—Dr. G. Henry Mundt, Chicago, addressed the Kane County Medical Society at Elgin, September 12, on "The Social Aspects of the Practice of Medicine."——Dr. John W. Hopkins, for several years a member of the staff of the Hinsdale Sanatorium, Hinsdale, has resigned to accept a similar position at the Glendale Sanatorium, Glendale, Calif.——Dr. Guy H. Jacobson, Taylorville, has been appointed county physician, it is reported, at a salary of $10,000.——Dr. Martha Anderson, South Bend, Ind., has been appointed medical director of the Adams County Tuberculosis Sanatorium, Quincy, effective October 1.

Third Annual All-Day Clinic.—The Adams County Medical Society will hold its third annual all-day fall clinical meeting at Elks Club Hall, Fourth and Jersey streets, Quincy, October 15. There will be a symposium on fractures in the morning by Drs. William R. Cubbins, Harry E. Mock and Paul B. Magnuson, all of Chicago, arranged particularly to interest general practitioners. The other guests include Drs. Joseph B. De Lee, obstetrician; Allen B. Kanavel, surgeon, and James G. Carr and Irving S. Cutter, internists, all of Chicago. The variety of subjects should interest every member of the society. There will be a morning, afternoon and evening session. All of the foregoing speakers are on the faculty at Northwestern University Medical School.

Chicago

Society News.—During the last year the Chicago Medical Society conducted thirty-two scientific programs, seven of which were presented by out-of-town guests.——The Chicago Laryngological and Otological Society will be addressed, October 1, at the Medical and Dental Arts Club, 185 North Wabash Avenue, by Dr. John E. Mackenty, New York, on "Cancer of the Larynx," illustrated by lantern slides.——The Chicago Society of Industrial Medicine and Surgery will hold a regular meeting at the Great Northern Hotel, October 1. Mr. J. Robert Johnson will speak on "The Increasingly Alarming Problem of Workmen's Compensation."——Dr. Margarete Meta H. Kunde will address the Chicago Council of Medical Women, October 5, at the Medical and Dental Arts Club, on the significance of basal metabolism in the diagnosis of disease.

Diphtheria Situation Considered Serious.—For the first time in years, the city commissioner of health says, there has been a distinct increase in the number of cases and deaths from diphtheria in Chicago. In eight months of 1928, there were 292 deaths among 2,877 cases, a fatality rate of 10.1. The increase in deaths has been relatively much greater than the increase in cases. A similar experience is being reported in other communities and countries. There has been no outbreak of diphtheria during the year in any special group and no evidence of a common factor of distribution, but rather an increased dissemination of the disease throughout the city. The commissioner appeals to the physicians to assist in lowering the mortality rate from diphtheria by immunizing children under their charge, especially those between 1 and 10 years of age, by means of toxin-antitoxin. The department of health will not immunize of its own accord, it is said, until the physicians have had an opportunity to do their share. Toxin-antitoxin may be had free of charge at room 707, city hall.

Public Medical Lectures at Art Institute.—The University of Chicago has arranged to give a series of public lectures on Thursdays, at 6:45 p. m., at the Art Institute, Michigan Avenue and Adams Street, on the general subject of "Medicine Through the Ages." This service is a continuation of the service to the public proposed by President Harper at the time the university was organized. Tickets for the course of lectures are on sale at University College, room 1100, 116 South Michigan Avenue, or at room 202, Cobb Hall, University of Chicago; they are not on sale at the Art Institute. The medical course for the autumn quarter will be as follows:

"Hippocrates and Galen," Dr. Morris Fishbein, October 4.
"Vesalius," Dr. Basil C. H. Harvey, October 11.
"Harvey," Dr. Anton J. Carlson, October 18.
"Sydenham," Dr. Franklin C. McLean, October 25.
"Paracelsus," Dr. Fishbein, November 1.
"Lister," Dr. Dallas B. Phemister, November 8.
"Paré," Dr. Harvey, November 15.
"Koch," Dr. Esmond R. Long, November 22.
"Behring and Roux," Dr. Charles P. Miller, Jr., December 6.
"Pasteur," Dr. Ludvig Hektoen, December 13.

Growth of Child Welfare in Chicago.—Anticipating the annual meeting of the American Public Health Association, October 15-19, the *American Journal of Public Health* has published an article on "Child Welfare in Chicago." Child welfare work is said to have started here in 1896 with the medical inspection of school children for contagious diseases. This was expanded in 1908 to include physical examinations for defects, and nurses were added to follow up the cases. Almost all health activities in the public and parochial schools are carried on by the city department of health. The exceptions are the special nutrition work carried on by the Elizabeth McCormick Memorial Fund and tuberculosis prevention work conducted by the municipal tuberculosis sanatorium. One hundred and twenty-two physicians visit the schools daily to inspect pupils for contagious diseases, each one of whom is permanently assigned to a district and is held responsible in that area. Fifty-two physicians conduct physical examinations of children in the primary and kindergarten grades and routine reinspections of the higher grades. From ten to twenty physicians are assigned to the administration of toxin-antitoxin, vaccinating against smallpox and making Schick tests. They spend their time in the schools five days a week and on Saturdays at the infant welfare stations and other health centers. Defects discovered may be corrected by private family physicians, dispensaries and other special agencies. Dental care is provided through twelve dental clinics maintained in the schools by the department of health, the dental clinic at the Cook County Hospital, at the dispensaries of the municipal tuberculosis sanatorium and at the clinics of the dental colleges in the city. Hygiene courses are given to grammar school pupils of the parochial schools by the health department and the Red Cross. Infant welfare, as it is today, had its beginning in 1909 in a cooperative effort of the department of health, visiting nurse association, United Charities and the milk commission to lower the infant mortality rate. Later, the baby welfare stations were reorganized into a single private agency called the Chicago Infant Welfare Society, which today conducts twenty-three stations. The department of health, which entered this field in 1913 in cooperation with the infant welfare society, has twenty-two stations in the outlying districts. Each organization by agreement works in its own district. These two agencies have expanded infant welfare work still further to include prenatal and preschool care. The infant welfare society has ten prenatal and seventeen preschool conferences, and the department of health six prenatal and fourteen preschool conferences. The infant welfare society has added a psychiatric social worker to its staff. Now the nursery school has come into vogue, of which there are three notable examples: the University of Chicago Cooperative Nursery School, the Nursery School of the Franklin Public School, and the Mary Crane Nursery at Hull House. Much duplication of effort has been eliminated by clearing all of the cases through the social service exchange and by mutual understanding and cooperation promoted through the Chicago Council of Social Agencies. The medical schools and some hospitals also are interested in child welfare. Chicago is fortunate in having in all parts of the city small parks and playgrounds which play no small part in the welfare of its children.

KENTUCKY

New Hospital in Isolated District.—Under the auspices of the Frontier Nursing Service, the public provided funds for the construction of a hospital at Hyden which was dedicated in June, the dedicatory address being given by Sir Leslie Mackenzie of Scotland, who spoke of the similarity of the work being done in Scotland and that of the Frontier Nursing Service. Hyden is many miles from a railroad and very difficult to reach on account of the lack of good roads. The state and county, however, have appropriated a large sum of money for the construction of a modern road from Hyden to Hazard. The new hospital and health center will serve communities along Hurricane Creek and another stream by the name of "Hell-Fur-Sartin."

State Medical Election.—At the annual meeting of the Kentucky State Medical Association, Richmond, September 13, Dr. Granville S. Hanes, Louisville, was made president elect; Drs. Jarvis L. Anderson, Manchester, Edward Wilson, Pineville, and Austin F. Finley, Madisonville, vice presidents; Dr. William B. McClure, Lexington, treasurer, and Dr. Arthur T. McCormack, secretary, reelected for a term of five years. Dr. Omar N. Shively, Campbellsville, was elected orator in medicine. Dr. William Barnett Owen, Louisville, was reelected orator in surgery and is said to be the first person to hold that honor a second time. Dr. Irvin Abell, Louisville, was reelected delegate to the American Medical Association. It was decided to hold the 1929 meeting at Louisville.

MICHIGAN

Personal.—Dr. William K. West, who has been surgeon in the mines of the Copper Range Company, near Calumet, for twenty-three years, has resigned and will move to Hinsdale, Ill., a suburb of Chicago. Dr. West will be succeeded by Dr. Leslie E. Coffin, who has been with the Oliver Mining Company at Iron Mountain for many years.

Society News.—Dr. Arthur J. Cramp, Chicago, Bureau of Investigation, American Medical Association, addressed the surgical section of the Wayne County Medical Society, September 25, on "Quacks and Nostrums," and previously broadcast over station WGHP; the society will be addressed, October 2, by Dr. Cyrus C. Sturgis, Ann Arbor, on "Cardiac Disease."——The Highland Park Physicians Club will be addressed, October 4, by Dr. Robert I. Harris, Toronto, on "Tuberculosis Bacilluria: Its Incidence and Significance in Surgical Tuberculosis." Members of the Wayne County Medical Society are invited.——The Oakland County Dental Society invited the Oakland County Medical Society to be its guest at golf and dinner, September 26, at Long Lake.——Dr. and Mrs. William H. Flint, Perry, celebrated their golden wedding anniversary, July 31.

NEW JERSEY

Typhoid Follows Church Supper.—The outbreak of typhoid at Freehold which, on September 20, amounted to thirteen cases, is believed to have been due to a carrier who assisted in serving food at a church supper, August 22, which was attended by about 500 people. An investigation disclosed that all of the victims had partaken of chicken salad.

Health at Trenton.—Telegraphic reports to the U. S. Department of Commerce from sixty-eight cities with a total population of about 30 million, for the week ending September 8, indicate that the highest mortality rate (17.3) was for Trenton, and that the mortality rate for the group of cities as a whole was 10.3. The mortality rate for Trenton for the corresponding week last year was 13.7, and for the group of cities, 11.3.

NEW YORK

Three Townships Without a Physician.—A rural area, comprising Berne, Knox and Westerlo townships, adjoining one another in Albany County, now has no physician. There has always been a physician in each of the villages of Berne and Westerlo, and the state department of health says that two excellent practices and three health officer positions await the properly qualified physicians. Berne is a town of about 1,400 persons, Westerlo of about 1,300 and Knox of about 940. Physicians desiring information about these communities should write Mr. Nathaniel D. Gallup, East Berne, a supervisor of one of the townships.

Dr. Pearson Honored.—In connection with the campaign to raise a $2,000,000 endowment fund for Albany Medical College, Albany, a fund is being raised to establish a chair of chemistry in honor of Dr. William L. Pearson, Schenectady, who is completing his fiftieth year in the practice of medicine since graduating from Albany Medical College. The memorial, which will be known as the Pearson Chair of Chemistry, will also memorialize his father's service to Union University Medical College, where he held the chair of chemistry for many years. The general citizens committee, which has been organized to raise the necessary funds, requests that checks be forwarded to Edmund N. Huyck, Albany Medical College, Albany, marked for "The Dr. William L. Pearson Fund."

Celebration of Absence of Diphtheria.—Middletown, a city of about 20,000 persons, completed three years without a case of diphtheria, and the record was celebrated, August 3. A dinner was given to the health officer, Dr. Hilton J. Shelley, which was attended by city and state officials and others invited by the Middletown Physicians' Club. In his address, the mayor emphasized that 63 per cent of the school children under 10 years had been immunized with toxin-antitoxin. Dr. Edward H. Marsh, Albany, secretary, state health department, said that one of the chief reasons for the successful attack on diphtheria was the cooperation between the health board, the health officer and the physicians of the city. Other speakers were officers of the chamber of commerce and the district state health officer, Dr. Frank W. Laidlaw.

New York City

Dr. Williams Retires from Tuberculosis Association.—Dr. Linsly R. Williams has retired as managing director of the National Tuberculosis Association and Dr. Kendall Emerson, Worcester, Mass., has been appointed his successor. Dr. Williams was appointed to this position in 1922.

Mothercraft at Coney Island.—Four talks and one demonstration in mothercraft were conducted at Coney Island in July by the Maternity Center Association of Brooklyn for mothers of children registered with the kindergartens of the public schools. The talks, which were given under a large shade tree on the grounds, or in the club house when it rained, were practically the same as those given by the association to expectant mothers at the clinics at some hospitals. The subjects were prenatal care, preparation for the baby's arrival, a demonstration of the bath, the care a mother should receive during the nursing period and habit formation in infancy.

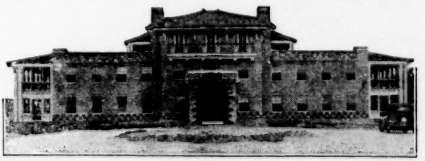
Mrs. Sanger Resigns from Birth Control League.—Mrs. Margaret Sanger, founder and president of the American Birth Control League, resigned, September 11, to devote her time, the New York *Times* says, to a study of methods for reducing mortality among mothers as a result of childbirth. Mrs. Sanger is quoted as saying that she has been interested in this problem since 1914, and this particular aspect of the situation led to the beginning of the birth control movement. She expects to spend from three to five years in collecting material and in sociologic investigation of the causes and cure of maternal mortality. Mrs. F. Robertson Jones will succeed her as president of the American Birth Control League.

College of Pharmacy Joins University.—It was announced, September 12, that the Brooklyn College of Pharmacy is to merge with Long Island University, the consolidation to take place before the college begins the construction of a $500,000 plant adjoining its present building at 265-271 Nostrand Avenue, which will be completed within a year. Long Island University occupied its new building on Pearl and Tillary streets, Brooklyn, September 15. The Kings County Pharmaceutical Society approved the merger. The Brooklyn College of Pharmacy was established in 1887 by this society as a lecture center, and became a full-fledged technical college in 1891. It is said to have graduated, in all, about 3,000 students.

Dedication of Medical Center.—The Joint Administrative Board on behalf of Columbia University, the Neurological Institute, the Babies' Hospital, Presbyterian Hospital, Sloane Hospital for Women and the Vanderbilt Clinic announces the formal dedication of the Medical Center, Friday, October 12, 3 p. m., at 180 Fort Washington Avenue. The following buildings will be open for inspection at that time: the College of Physicians and Surgeons, Presbyterian Hospital, Vanderbilt Clinic, Anna C. Maxwell Hall and the School of Dental and Oral Surgery. Admission will be by card. The address of dedication will be given by Dr. Samuel W. Lambert, dean emeritus of the College of Physicians and Surgeons. Nicholas Murray Butler, LL.D., president of Columbia University, will confer honorary degrees, and the chairman of the Joint Administrative Board, William Barclay Parsons, will give an address. The ceremonies will open with the academic procession, followed by the invocation by the chaplain of Columbia University, the Rev. Raymond C. Knox (THE JOURNAL, Aug. 27, 1927, p. 699).

NORTH CAROLINA

New Babies' Hospital Near Wilmington.—A new Babies' Hospital on Wrightsville Sound near Wilmington was opened in June to replace the old Babies' Hospital, which was burned last year. The new building is fireproof and fully equipped for pediatric work. There are large screened porches which overlook the ocean and two open roofs for sun baths. The new hospital, constructed with contributions from the public, is to be open to all physicians for the care of sick infants.



Only graduate nurses with pediatric training are employed. The board of directors plans to keep the hospital open the year round, whereas the former hospital was open only in the summer. A graduate course of four months will be given for nurses who desire special training. The state board of health considers the infant death rate in the state "disgracefully high" and therefore looks on this institution as a forward step for the southern section of the state.

OHIO

District Medical Meeting.—The annual meeting of the North Western Ohio District Medical Society, comprising twenty counties in the third and fourth councilor districts, will be at Lima, October 9, under the presidency of Dr. Dyle J. Slosser, Defiance. A banquet will follow an all-day scientific session; Drs. Foster Kennedy, professor of neurology, Cornell University Medical College, New York, will speak on "The Neuroses of Industrial Accident, of War and Peace"; Ralph Pemberton, Philadelphia, on "Control of Arthritis and Rheumatism"; Charles W. Stone, Cleveland, president, Ohio State Medical Association, on "Early History of Organized Medicine in Ohio." Dr. Albert H. Freiberg, Cincinnati, president elect of the state medical association, will speak. Persons desiring seats at the banquet should address Dr. Jerome V. Pace, Lima. A golf tournament, October 8, will precede the meeting. Arrangements to play can be made with Dr. Oliver S. Steiner, Lima. The scientific program includes:

Dr. Cyrus C. Sturgis, Ann Arbor, Mich., "Recent Advances in the Treatment of the Anemias."
Dr. Willard C. Stoner, Cleveland, "Diagnosis and Treatment of Syphilis with a Consideration of End-Results."
Dr. Russell L. Mustard, Ann Arbor, Mich., "Septic Hands."
Dr. Norman M. Keith, Rochester, Minn., "Dropsy."
Dr. Edward J. O'Brien, Detroit, "Surgical Treatment of Pulmonary Infections."
Dr. Paul Roth, Battle Creek, Mich., "Why the Basal Metabolism Test for All."
Dr. Charles R. Sowder, Indianapolis, "Hypothyroidism."
Dr. Thomas B. Noble, Indianapolis, "A Better Incision for Exposure of Gallbladder."

PENNSYLVANIA

Personal.—Dr. H. G. Stevenson has been appointed superintendent of the Berks County Tuberculosis Sanatorium, Reading, to succeed Dr. Solis C. B. Hertzog, resigned.

Society News.—The Fayette County Medical Society, Uniontown, was addressed, September 6, by Dr. Lawrence G. Beinhauer, Pittsburgh, on differential diagnosis of cutaneous syphilis.——Dr. Daniel J. McCarthy, Philadelphia, addressed the Bucks County Medical Society, Buckingham, September 12, on "Medical Jurisprudence."——The Allegheny County Medical Society will hold a joint meeting with the Tenth Councilor District Society at Carnegie Hall, Pittsburgh, October 16; there will be clinics in the morning and a scientific program in the afternoon. During the year ending June 1, twenty-six members of the Allegheny County Medical Society gave public lectures on health topics in cooperation with the public relations committee.

Case Report Contest.—The Allegheny County Medical Society, Pittsburgh, again offers a first prize of $25 and a second of $15 for the two best case reports submitted by interns of any approved hospital in Allegheny County. The report, not exceeding 1,200 words, shall be of a case that has been under the care of the contestant during his internship. There shall be nothing on the manuscript to indicate the identity of the writer, but in an attached sealed envelope shall be his name, hospital, date of graduation and signature of the member of the staff on whose service the case was attended. Judges will be appointed by the president of the society. Manuscripts should be mailed to the secretary, Allegheny County Medical Society, Jenkins Arcade, Pittsburgh, before April 1, 1929, and marked "Case Report Contest."

Proposed Fifty Million Dollar Bond Issue for Hospitals.—Pennsylvania will vote in November on a $50,000,000 bond issue for the purpose of acquiring land and buildings and the equipment thereof for the care and maintenance of mental defectives, epileptic patients, delinquents, persons mentally diseased and penal offenders. Pennsylvania now has eight mental hospitals which care for an average daily population of 11,166 patients. Every one of these hospitals is said to be overcrowded according to the *Weekly Roster and Medical Digest*, and some lack the essentials to give modern care to patients. In five of them, patients sleep in hallways, attics and basements, and space needed during the day for living purposes is crowded with beds. Many of these patients need rest and quiet above all, but they are huddled together in rooms too small for proper exercise and recreation. The dining rooms are crowded. In three hospitals there is no separate provision for tuberculous patients, and few of them have facilities for the care of contagious diseases. Furthermore, the living quarters for physicians and others engaged in this work are so limited and uncomfortable that resignations are frequent.

State Medical Meeting at Allentown.—At the annual meeting of the Medical Society of the State of Pennsylvania, Allentown, October 1-4, in addition to guests noted in THE JOURNAL, September 8, Dr. Fritz B. Talbot, Boston, will address the pediatric section on "Endocrine Disturbances in Childhood," and Dr. Roger H. Dennett, New York, on "Our Infant Feeding Problems." The technical exhibits at this meeting, the *Atlantic Medical Journal* says, will be of more interest than usual; eighty-four spaces have been sold. There will be the usual exhibit of specimens, roentgen-ray plates and photographs, and in addition there will be clinics. An innovation will be a popular scientific meeting Tuesday evening instead of the usual smoker, immediately following which will be the president's reception and dance. The meeting places are within a radius of three squares, the registration bureau, the section on surgery, and the section on pediatrics being at the Masonic Temple; the eye, ear, nose and throat section at the Nurses' Home, Seventeenth and Chew streets; the sections on dermatology and urology at the Hotel Traylor, and the women's auxiliary at the Elks Club. The Jefferson Medical College alumni luncheon will be Wednesday at the Americus Hotel; one of the speakers will be Dr. Hobart A. Hare, Philadelphia. There will be clinics, Monday, in the Sacred Heart and Allentown hospitals, and on Friday clinics and a buffet luncheon at the state hospital in East Allentown. The state medical golf association will hold its annual tournament during the state medical meeting. Every member of the society is eligible for membership in the golf association. Those desiring to play in the tournament who do not have their cars along will be provided transportation to the golf course on application to the local committee, the chairman of which is Dr. Frederick A. Fetherolf, Allentown.

Philadelphia

Hospital News.—Work was started, September 15, on the new $1,500,000 Institute for Nervous Disorders of the Pennsylvania Hospital for Mental Diseases, Forty-Ninth and Market streets, which will be modeled after the new units of the Philadelphia General Hospital, and, with its outpatient department, research and clinical laboratories, will be operated in a similar manner.

Personal.—Dr. William E. Ashton has been awarded the Distinguished Service Cross. The citation states that he "went forward under heavy artillery fire near Marcq, France, Oct. 18, 1918, and aided wounded men, being subjected to constant explosions of phosgene gas and being compelled to remove his gas mask to accomplish the work." Dr. Ashton was regimental surgeon in the three hundred and ninth field artillery.

Society News.—Symposium on Legal Medicine.—The Philadelphia Psychiatric Society will conduct a symposium on legal medicine at the college of physicians, October 12, Drs. LeRoy Maeder speaking on "Insanity and the Law with Special Reference to Testamentary Capacity"; Daniel J. McCarthy, on "Responsibility," and Judge Paul N. Schaeffer, on "The Sentence and Its Effect on Criminals." This will be the first of a series of symposiums to be given by the society.—— The Philadelphia Obstetrical Society will be addressed, October 4, at the college of physicians, 19 South Twenty-Second Street, Drs. Aaron Capper on "Cerebral Birth Injuries"; Cheney M. Stimson and Harold Jones, "Erythrocyte Sedimentation Test in Gynecology"; George M. Boyd, "Puerperal Fever Before and After Lister" and Philip F. Williams, "Classification of Gestational Toxemia."

Gift to Buy Gram of Radium.—The University of Pennsylvania Graduate School of Medicine has received a gift of $100,000 for the purchase of a gram of radium and accessories for use in the treatment of cancer. The donor was Mr. Louis J. Kolb of Germantown who graduated from the University of Pennsylvania in 1887. About $72,000 of the gift will be required to buy the radium and the remainder will go to expenses involved in research. The gift will make possible the treatment with radium of the neediest patient with cancer. The fund will be designated as the Louis J. Kolb Foundation for the Treatment of Cancer and Dr. George E. Pfahler, professor of radiology, will be in charge. Dr. Pfahler is a former president of the American Roentgen Ray Society and is now visiting the more noted cancer clinics in Europe. The Kolb gift is the second which the university has recently received to fight cancer, Irenee DuPont having contributed $45,000 for cancer research. As a result of Mr. DuPont's gift the physicochemical conditions associated with the cancer state are being studied under the direction of a faculty committee, comprising Dr. E. Ellice McDonald, assistant professor of gynecology, William C. Seifriz, Ph.D., professor of botany, and Dr. George H. Meeker, dean of the graduate school of medicine.

SOUTH CAROLINA

Personal.—Dr. Larkin H. Jennings, formerly of Bishopsville, has been appointed director of the new full-time county health unit for Oconee County. This county is engaged at present in raising funds for the construction of the county hospital. Rural health work seems to be on the increase. There are about eighteen counties with health units, and county hospitals are being built at various places with the assistance of the Duke Foundation.

Appeal to Medical Societies in Pellagra Increase.—The executive committee of the state board of health has requested the cooperation of the county medical societies, the public press and the *Journal of the South Carolina Medical Association* in an attack of pellagra which apparently has recently rapidly increased in the state. On request, the U. S. Public Health Service detailed one of its most experienced officers to assist in the investigation in South Carolina and to advise health authorities in the management of the outbreak of this disease. The state medical journal suggests that the county medical societies make pellagra the leading topic for their discussion at once, thus concentrating on this problem the attention of the profession of the state.

Society News.—At the July meeting of the Greenville County Medical Society, Basil S. Allen, D.D.S., read a paper on "The Common Problem of the Physician and the Dentist."——Dr. Philip F. Barbour, Louisville, Ky., spoke at the banquet of the Southern Pediatric Seminar, Saluda, July 30, on "Significance of the Leukocyte Count"; other speakers were Drs. Frank H. Richardson, Black Mountain, N. C.; Francis B. Johnson, Charleston, and D. Lesesne Smith, Spartanburg.—— Pellagra was the subject for special discussion at the August 15

meeting of the Oconee County Medical Society at Westminster. Physicians present reported an increase in the number of cases but called attention to the tendency of such patients to go from one physician to another and thus cause the number of cases to be reported to be inaccurate.—At the Second District Medical Society meeting, Aikin, July 17, the speaker at the evening session was Dr. William R. Houston, Augusta, Ga., on "The Pathogenic Right Colon." Dr. Oscar P. Wise, Saluda, was elected president of the society for the ensuing year.

TENNESSEE

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from sixty-eight cities with a total population of about 31 million, for the week ending September 1, indicate that the highest mortality rate (18.7) was for Memphis, and that the mortality rate for the group of cities as a whole was 11.2. The mortality rate for Memphis for the corresponding week last year was 19.2, and for the group of cities, 10.4.

Society News.—The University of Tennessee College of Medicine is offering postgraduate courses of from two to four weeks' duration. Courses in orthopedic surgery and pulmonary tuberculosis will start in October and courses in roentgenology and gastro-enterology in November. A number of other graduate courses are scheduled to start in January, February, March, April and May.——At the August 7 meeting of the Memphis and Shelby County Medical Society, Memphis, Drs. Milton B. Seligstein read a paper on "Eye Diseases of Constitutional Origin"; Samuel L. Wadley on "Malnutrition in School Children," and Oswald S. McCown on "Hypernephroma."

TEXAS

Selling Prescription Blanks to Druggists.—Two physicians of Dallas have been found guilty by juries of violating the national prohibition act in connection with the sale of prescription blanks to druggists. A pharmacist was also found guilty of conspiring to violate the national prohibition law, and the offense, it is reported, is punishable by a term of from one to five years in prison. Trials against two other physicians on similar charges were continued until the October term of court.

Chiropractor Allison Seems Fond of Suits.—In reviewing the various efforts of chiropractors to gain publicity, the editor of the *Texas State Journal of Medicine* notes that chiropractor H. C. Allison of Fort Worth has filed suit against the state medical association for $50,000, alleging that two suits were filed against him at the instance of the association, both of which were thrown out of court for lack of evidence, denying that he had ever practiced medicine and holding that the suits were brought through malice to injure him. Chiropractor Allison filed suit once before against Dr. Charles M. Rosser, who was then president of the state medical association. The case never came to trial. No papers have yet been filed in Chiropractor Allison's latest suit. He has received much free publicity and that is something.

Medical Journal Improved.—For several issues, the *Texas State Journal of Medicine* has been published in an improved form. There has been a better grade of paper, more reading material, and the forms have been saddle-stitched. The trustees of the state association have decided to continue these improvements for the present at least, and to add calendered paper in those forms in which halftones appear, and a separate calendered paper cover. An increase in advertising income has made these changes possible. It is expected that a still larger revenue will be forthcoming this year to meet the greater cost of publication. The journal collected almost $7,000 more last year from advertising than in the previous year. The trustees desire to hear from subscribers about the journal, and will welcome suggestions and constructive criticism.

GENERAL

Leonard Wood Leprosy Fund Exceeds $1,000,000.—It was announced, September 10, by Gen. James G. Harbord, national chairman of the Leonard Wood Memorial for the Eradication of Leprosy, that with the gift of $100,000 from Mr. John D. Rockefeller, Jr., a sufficient amount had been subscribed to exceed by more than half the $2,000,000 fund. The thanks of the Philippine government to Mr. Rockefeller was cabled by Governor General Stimson from Manila. The campaign to date has been carried on in only ten cities but will be extended to all parts of the country in an effort to complete the drive this year. The largest gift received was $180,000 from Mr. Eversley Childs, New York, president of the Bon Ami Company, for the purpose of establishing a treatment station for the milder cases of leprosy at Cebu. This station is already under construction. A part of the program in leprosy eradication in the Philippines is to erect treatment stations in various parts of the islands. Heretofore all lepers were taken to the Cuilion leper colony.

Right of Way for Physicians on Emergency Calls.—The American Automobile Association says that eight states, Arizona, Arkansas, California, Minnesota, Nebraska, New Jersey, New Mexico and Texas, exempt physicians from compliance with speed laws while answering emergency calls. The speed law does not apply when emergency calls are being made in six of these states, and in New Jersey and Minnesota a physician whose motor car is stopped while responding to an emergency is allowed to proceed after his license has been inspected and noted. Subsequently such proceedings may be taken as would have been proper had he not been a physician or ambulance driver. There is a tendency throughout the country, the American Automobile Association says, to put physicians answering emergency calls in the same class as fire trucks and police automobiles. The association calls on motorists to cooperate with authorities at all times by giving the right of way to cars answering emergency calls. On the approach of an ambulance or car that is being given the right of way, the statement says motorists should pull aside to the curb as they are required to do when fire trucks are responding to a call.

The Birthday of Gorgas.—The seventy-fourth birthday of Dr. William C. Gorgas will be October 3, when twenty-one American republics will pause to consider the work of him who made possible the construction of the Panama Canal. The Congress of the United States has granted an annuity of $50,000 toward the maintenance of a laboratory in Panama, or possibly on a site in the contiguous Canal Zone, in honor of Gorgas and to make possible the further study of tropical disease. During the week of October 3, the scientific board of the Gorgas Memorial Institute will meet in Boston and select the man who will direct the affairs of the laboratory. A great banquet will be held at Washington, where ambassadors from the American republics will be officially notified of the congressional act of the United States, and each will be invited to convey to his own government an invitation to take part in conducting the business of the Gorgas Memorial laboratory. The laboratory, for the present, will occupy a building recently constructed by the Republic of Panama for a hall of medicine at Panama University. The first problem to be attacked will be malaria. The president of the Gorgas Memorial Insitute is Dr. Franklin Martin, Chicago; the chairman of the scientific board is Dr. Richard P. Strong, Boston.

Society News.—The seventeenth annual Safety Congress will convene in New York, October 1-5. There will be 110 meetings and 325 speakers. The congress will consider how to check accidents on the streets and highways. Meetings will be held in the Hotels Pennsylvania, McAlpin, Waldorf-Astoria, Commodore and Martinique. There will be no charge for admission.——The American Pharmaceutical Association, at its seventy-sixth annual meeting in Portland, Me., in August, voted to appoint a committee of five to make a scientific study of cosmetics, from the standpoint of injurious ingredients and harmful effects, to determine whether restrictive legislation is necessary. The association passed a resolution deploring the present system of training technicians for clinical diagnostic laboratories in cases in which such training is superficial or inadequate, and urged the importance of employing only technicians who have adequate scientific training. The association will hold its next annual meeting in Rapid City, S. D., during the week of August 26, 1929.——The tri-state meeting (Idaho, Montana, Wyoming), held in Yellowstone National Park in August, was attended by about 225 physicians, which was considered a satisfactory turnout.——At the annual meeting of the western branch of the American Urological Association, Del Monte, Calif., September 14-15, Dr. Wirt B. Dakin, Los Angeles, was made president, and Dr. Alexander Peacock, Seattle, secretary. The program at this meeting comprised the presentation of eleven scientific papers.

Hurricane Kills and Injures Hundreds.—A West Indian hurricane of unusual violence struck San Juan, P. R., September 13, and then proceeded northward striking the east coast of Florida, September 16. The devastation wrought in Porto Rico and Florida is said to be indescribable. Governor Towner estimated that half the population of Porto Rico was homeless. An estimate of the dead in Porto Rico, as of September 23, placed the number at about 1,000, and property loss as incalculable. Outbreaks of influenza and other respiratory diseases amounting to 15,000 cases, with 5,000 cases of malaria, measles and other contagious diseases, followed the storm. Florida suf-

fered even more than in the hurricane of two years ago. The chairman of the Palm Beach County Red Cross, Mr. Howard W. Selby, announced, September 24, that 2,200 dead had been revealed by surveys. The greatest loss of life was in the Lake Okeechobee district, where an 8 foot wave inundated a large part of the Everglades. Many dead are said to have been completely buried by the storm and are in such inaccessible places that they may never be found. In some communities, notably Pahokee, a thriving farming center, there was not a building that was not at least partly wrecked. Palm Beach and West Palm Beach suffered heavily. The total property damage in Florida has been estimated as high as $100,000,000. National guard units were called out. The American Red Cross called for $5,000,000 for relief work. Physicians and nurses were being sent to various places to care for the wounded and the sick.

Army Interns Must Serve at Least Two Years.—An order has been issued by the Secretary of War which is intended to stop the practice of graduate medical students resigning immediately after concluding their internship training in army hospitals. Such resignations take undue advantage of the government, as the young medical graduates who resign have not only had their internship at the expense of the government but have received during that time the pay of a regular army officer of the same grade. Their pay varies from $2,200 to $3,200 a year, according to whether they have dependents or not. The policy of accepting young medical graduates for internship in the large army hospitals on the status of commissioned officers was inaugurated by the war department to build up the regular army medical corps. It was not intended that they should resign to engage in the private practice of medicine immediately after receiving their training. During the period in which this internship training policy has been followed in the army, ninety-five medical college graduates have accepted appointments in the medical corps and thirty-two of them have withdrawn from the service. For the purpose of overcoming this unfair practice, the Secretary of War has directed that hereafter appointments of interns in army hospitals shall include a contract that the officer appointed shall serve two years, or such longer period as the surgeon general may consider proper after completion of the intern course and the acceptance of his commission as an officer of the regular army. The number of applicants for commission in the medical corps is many times the number of vacancies existing, and it is important that only those young physicians be selected for internship training who are earnestly and sincerely interested in qualifying for and accepting a commission in the regular army medical corps.

Prevention of Food Poisoning.—An unusually large number of outbreaks of food poisoning have been reported to the U. S. Department of Agriculture during the last few months. The illness was restricted to persons partaking of a particular dish or meal, and was characterized by prostration, diarrhea, vomiting, rise of temperature, abnormal pulse and a few mortalities. No authentic case of botulism has been reported. Food poisoning of this type, the department says, is usually due to infection with a specific micro-organism or to poisoning by toxins formed by bacteria in the food between the time it is prepared and its consumption. By proper precautions such cases can be reduced to the minimum. The types of bacteria causing what is often erroneously called ptomaine poisoning may be killed by the cooking process, in which food is heated to the boiling point. However, the food may be contaminated after it has been cooked, and it should therefore be refrigerated to inhibit the development of bacteria. Canned foods, unless obviously unfit for use or spoiled, should be free from these bacteria, but if they are held for a few hours after removal from the can the same precautions as to recooking and refrigeration should be observed as in the case of freshly prepared foods. Meat pies, hash, some salads, puddings, cream pie fillings, escalloped fish and oysters frequently cause illness because in preparation insufficient heat has been used to destroy bacteria or their toxins. Such foods offer extremely favorable conditions for the development of bacteria if inadequately heated and improperly refrigerated. Food to be eaten raw should be fresh, free from abnormal odors, mold and rotting areas and washed in water that is fit for drinking purposes. Other precautionary measures include protection from rats, mice or dust and the complete cleanliness of all utensils used for cooking.

Prevention of Injury from Chromium Plating.—In the manufacture of chromic acid and chromates, the operators are subject to the formation of ulcers or "chrome holes" on the hands or other exposed parts and to perforation of the nasal septum. In view of the fact that chromium plating is extensively employed in finishing automobile parts and plumbing fixtures because of its luster and resistance to tarnish, and on printing plates and tools on account of its hardness, the U. S. Public Health Service, assisted by the Bureau of Standards, made a study to determine the extent of the health hazard and the best means of overcoming it. Six plants were visited and the results noted were so consistent and agreed so well with previous experience with chromates that certain conclusions seem warranted. It was found that exposures to concentrations of chromic acid as low as 1 mg. in 10 cubic meters of air, which is about the volume of air breathed by a worker in eight hours, are sufficient to cause nosebleed or nasal inflammation in a week or less. Many of the employees visited had chromium ulcers on exposed parts of the body, but no evidence was found of injury to the respiratory tract other than in the nose, or of any injury to the kidneys or digestive system. The hazard in chromium plating therefore is said to be real but not critical. It can be eliminated by a ventilating system which draws the air horizontally across the plating tanks into a narrow duct in which the air velocity should be about 2,000 feet a minute. Frequent applications of petrolatum to the hands and nose greatly reduce the danger of ulceration. Skin cuts and abrasions should be carefully taken care of and regularly inspected, and rubber gloves, aprons and shoes should be worn. There is no reason, the public health service says, to fear any serious injuries from the extension of chromium plating in the next few years, if these practicable measures are taken.

Nonservice Disabilities Fill Veterans' Hospitals.—At the formal opening of the new 350 bed hospital at Bedford, Mass., recently, the director of the veterans' bureau, Frank T. Hines, summarized the hospital facilities of the bureau. It has now fifty hospitals in operation, with a total capacity of 22,112 beds. At present, 90 per cent of the available beds in veterans' bureau hospitals are in permanent government-owned structures, while in 1920 such beds constituted only 5 per cent of the total. The government formerly used a large number of leased institutions to provide for veterans, but now only five bureau hospitals are under lease, two of which are to be closed soon and three of which will be replaced by government facilities now under construction or planned under existing authorizations. About 8,400 beds are reserved for beneficiaries of the bureau in government hospitals which are not operated by the veterans' bureau. These make a grand total of more than 30,000 beds available for beneficiaries. Construction work is in progress on a 261 bed hospital at Tucson, Ariz., which is expected to open in October; on a 300 bed hospital at Portland, Ore., which is expected to be completed in November, and on a structure at Fargo, N. D., to house the regional office of the bureau and to provide fifty-seven hospital beds for observation cases. The last project is scheduled for completion in January, 1929. There remains then but one other project to complete the $10,000,000 program authorized March 3, 1925, and that is the 400 bed hospital at Alexandria, La., now under construction. During the last session of Congress, the director of the veterans' bureau presented a $12,115,000 construction program to acquire a total of 3,320 beds, chiefly for psychotic cases. This would provide for the expected increase in these cases for several years. The committee of the house not only accepted the program but added a 250 bed hospital for southern New England and a 250 bed hospital for Kentucky, thus increasing the amount of the program to $15,000,000, which is the sum authorized for additional hospital facilities and approved May 23, 1928. Under this authorization, the bureau is directing its efforts to provide additional beds for New England, to replace the unsuitable facilities at Philadelphia by erecting a 400 bed hospital in both Pennsylvania and New Jersey, and to erect an occupational therapy building at Northport, Long Island. General Hines believes that the hospital facilities now available or planned should prove ample under normal conditions for both the service-connected and nonservice-connected cases of the tuberculous and general, medical and surgical types for some time to come. The trend of the service-connected load for both of these types has been downward for some time. The need today, he says, is hospital accommodations for psychotic patients, since this load will continue to increase. The last Congress considered placing the National Homes of Disabled Volunteer Soldiers under the jurisdiction of the veterans' bureau. If this action is taken, the facilities thus acquired will have a decided influence on future hospital construction by the bureau. At present, there are more than 26,000 persons in all the veterans' bureau hospitals, including 13,000 mental and nervous cases, about 6,500 cases of tuberculosis, and about 6,500 general, medical and surgical cases. The total is an increase of 821 over last year. General Hines said that 35 per cent of patients now in hospitals were admitted for nonservice disabilities, and of the 73,000 admissions during the fiscal year 1928, about 60 per cent were patients admitted for nonservice-connected disabilities.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 1, 1928.

India as a Source of Epidemics

At a lecture given before the Rotary Club of Calcutta, Col. J. D. Graham of the Indian Medical Service, public health commissioner, commented on the fact that India's birth rate for 1925 was nearly twice that of England and Wales; her death rate was twice that of England and Wales and nearly three times that of New Zealand, and her infantile mortality rate was nearly two and a third times that of England and Wales and nearly four and a half times that of New Zealand. For the great group of infectious diseases of world import, namely plague, cholera, smallpox, yellow fever, typhus, malaria and dysentery, if typhus and yellow fever were excepted, India was one of the world reservoirs of infection and the main reservoir of infection for plague and cholera. The implication was that India's house from the point of view of public health was sadly out of order. Till recently this seemed a matter which concerned India alone, and it was largely in this spirit that this question was regarded. With the reawakening of interest in all social problems, and the increased international activity regarding public health and the prevention of disease which occurred after the Great War, it was evident that much in the realm of national disease which formerly passed unnoticed must now come into the limelight and be subjected to international scrutiny. It was not enough for India to say that she was concerned with 300 millions of her own subjects and had no time to worry over the activities of other nations. She must be prepared to recognize that, in virtue of her important commercial position, she was an international offender—and a dangerous one as well—and in this spirit to set about tackling the problem by utilizing the most recent discoveries of research. The public health commissioner for India was not only a member of the permanent committee of the Paris bureau of the League of Nations but was also one of the twenty members of the health committee of the league. What would perhaps appeal more directly to the meeting, however, were the activities surrounding the creation of the epidemiologic bureau in Singapore. The present position was that 137 ports of Asia, Australia and the East Coast of Africa were now sending weekly information to the bureau, all of which was incorporated in the broadcast coded message sent out from Singapore. In addition, the powerful apparatus of Mauen picked up the Saigon message and rebroadcast it for the benefit of Europe, so that by Saturday of each week the infectious disease condition of 137 ports of the East up to the previous Saturday midnight was known everywhere in Europe, Asia and Africa. A few years ago India might have been excused for delinquency in international matters, but a time had arrived when, through her obligations to the League of Nations assembly and through her commerce, she was called on to take her position as one among the comity of nations. She must be prepared not only to receive information but to give it and to make a serious attempt to establish a public health conscience and to act on it.

French and English Birth and Death Rates

For many years France has been regarded as the great example of birth restriction. It is therefore startling to find that the English birth rate has so declined as to be distinctly lower than the French. In France last year there was an increase in the total population in spite of the fact that the birth rate fell to 18.2 per thousand from 18.8 in 1926. The birth rate of England and Wales in 1927 was only 16.7 per thousand, and the French birth rate, contrary to popular opinion in this country, is considerably higher than the English. Population is increasing in England more rapidly than in France solely because the death rates and infant death rates here are lower than the death rates and infant death rates there. The death rate for England and Wales last year was 12.3 per thousand; the infant death rate was 69.2 per thousand births. The death rate in France in 1927 was 16.6 per thousand; in 1926 it was 17.5. The number of deaths in 1927 was 676,666; in 1926 the number was 713,458. The infant death rate for 1927 was 85 per thousand births, in 1926 it was 97.

The Control of Dangerous Drugs

As the International Opium Convention signed at Geneva, Feb. 19, 1925, has now received the requisite number of ratifications, an order in council has been issued stating that the Dangerous Drugs Act, 1925 (which amended the dangerous drugs acts of 1920 and 1923 so as to enable effect to be given to the convention), will come into operation on Sept. 25, 1928. The chief alterations made by the new act will be the extension of control to Indian hemp and the resin obtained from it (hashish) and any extract or tincture of Indian hemp, and to preparations containing less than 0.1 per cent of diacetylmorphine (heroin), which up to now have been exempted. After September 25 a license will be required for the importation or exportation of any of these drugs. By an order in council the Dangerous Drugs Act, part III, which provides for the control of morphine, heroin and cocaine, has also been applied to benzoyl-morphine, dihydro-oxycodeinone, dihydrocodeinone, and their respective salts, and to any preparation, admixture and extract containing them. Benzoyl-morphine is an ester of morphine which, because it is not subject to the International Opium Convention and because morphine can be easily recovered from it, has been manufactured recently in large quantities on the continent for export to the Far East. The League of Nations has recommended that its manufacture and sale be controlled in the same way as that of morphine. Dihydrooxycodeinone and dihydrocodeinone are produced as pharmaceutic products, usually in the form of salts, by certain German firms under the trade names of "Eucodal" ("Eukodal") and "Dicodide," respectively. The League of Nations has reported that these drugs possess similar narcotic properties to those of morphine and has recommended the application of the same system of control. None of these drugs are manufactured, so far as is known, in Great Britain.

A Vaccine for Yellow Fever

The report of the trustees of the Beit memorial fellowships for medical research shows important progress in research on yellow fever. It will be recalled that investigation of this disease has recently cost the lives of three scientific workers of the first rank—Adrian Stokes, Hideyo Noguchi and William Alexander Young. In the past yellow fever was not limited to tropical and subtropical countries. Europe, and especially Spain, knew it, and England, through its garrisons at Gibraltar and in Africa and the West Indies, knew it only too well. In 1804 as the result of an epidemic of yellow fever in Gibraltar the deaths among the garrison and civil population in the short period of four months numbered 5,946. The civilian population was probably about 9,000. After the epidemic "only twenty-nine adults could be discovered who had resided within the walls who had escaped the malady." Dr. Edward Hindle, who was appointed last year to the Beit fellowship in tropical medicine ($5,000 per annum), began work in January, and in the short period which has since elapsed has obtained results in the course of a research on yellow fever which give good ground for the belief that a vaccine has been discovered which will afford protection against the disease. It has been known for many years that the causative agent is carried from patient to patient by the mosquito *Stegomyia fasciatus*. To Adrian Stokes, and his fellow workers at Lagos, Nigeria, is due the

credit of having shown that by mosquito infection the disease could be transferred from man to an Asiatic monkey—*Macacus rhesus*. African monkeys were known to be immune. They and others have also shown that the virus is not a spirochete, as has been of late believed by some authorities. Dr. Hindle and Dr. Sellards proved that the virus will bear carriage by sea in a refrigerator for twelve days or more and still retain its virulence. They also proved that it belongs to the group of filtrable viruses. Dr. Hindle, working independently, has since shown that: 1. The virus can be preserved, when present in a portion of liver or of the blood of a monkey dead from the disease, by drying it in a vacuum, and that as a dried paste or as a powder it retains its virulence apparently for an indefinite period. 2. If air is admitted to the containing vessel the virus is still active after a period of certainly three weeks or a month. 3. A very minute dose of the virus is invariably fatal in from four to seven days to monkeys of the species *Macacus rhesus*. 4. A vaccine prepared from the livers of infected monkeys will protect a monkey from the effects of a dose of the virus ten thousand times as great as the fatal dose, and the monkey continues to be healthy and lively. There are many points still to be decided during the further course of Dr. Hindle's research, such as the best methods of preparing and of administering the vaccine.

Pharmacists and Dangerous Drugs

Under the Dangerous Drugs Act and Regulations a pharmacist must not dispense a prescription containing certain drugs unless (1) he is acquainted with the prescriber's signature and has no reason to doubt the genuineness of the prescription, or (2) he has taken reasonably sufficient steps to satisfy himself that the prescription is genuine. For an offense against this act a pharmacist of Liverpool was fined $200. The charge was that of unlawfully dispensing a prescription for 20 grains (1.3 Gm.) of morphine sulphate to William Arthur Young without having taken reasonably sufficient steps to satisfy himself that the prescription was genuine. Young was unqualified and had posed as a physician but he attended patients and had even certified a mental case. He was sentenced to imprisonment for pretending to be a physician and also for obtaining certain quantities of morphine sulphate from two pharmacists. It was stated that he had practiced as a physician in Canada but had got into trouble, lost his qualifications and been deported. The prosecution of the pharmacist was obviously a sequel to the prosecution of Young. Important evidence on the pharmacist's behalf was that of a physician who had met Young. Young described himself as a Canadian mental specialist who wished to set up practice in Liverpool. "He was a most convincing person and had a good knowledge of mental cases; he impressed me as a man of ability, and I was satisfied that he was a medical man; I allowed him to see one of my patients with me, and he wrote out a detailed history of the case—a mental one." In answer to the judge the physician agreed that the more a pharmacist had examined Young, the more he would have been satisfied that Young was a physician; he also said that he would not have hesitated to let Young look after his patients if he had been away. The judge said that if there was nothing to make the physician suspicious there was nothing to make the pharmacist suspicious and reversed the previous judgment.

The Study of Foot and Mouth Disease

The third progress report of the Foot and Mouth Disease Research Committee has just been published. Research into this highly infectious malady of domesticated animals, caused by an invisible virus, presents special difficulties, and results are obtained but slowly. However, progress has been made in spite of these difficulties, and the work undertaken has resulted in the acquisition of knowledge concerning the pathology, epizootiology and immunology of the disease. The experiments suggest that the highly infective stage of the disease precedes the development of vesicles, the occurrence of which is generally the first manifestation of an outbreak to the farmer. A discovery of importance is that in the living animal a process of natural disinfection begins immediately after the blisters on the feet and tongue have reached their maximum and proceeds so quickly that infective material cannot usually be found about the feet or mouth or in the skin or tissues after a week. There are, however, exceptions when this process fails to be completed, and an animal may harbor the virus for a considerably longer time. Experiments to ascertain the length of survival of the virus outside the bodies of living animals showed that low temperature and dry atmosphere were the most favorable conditions. They also indicated the prejudicial action of light, and particularly of ultraviolet rays. The nature of the material on which the virus is dried exerts a potent and as yet unexplained influence on its survival. Whereas it dries rapidly on clean glass, cotton wool and filter paper, it has been found to live much longer when dried on hay or bran. Cow hair was one of the materials on which it survived for a month. These observations help to explain the several ways in which infection may lie dormant for months and then give rise to further outbreaks of the disease. It would appear from them that the persistence of the virus in carcasses, or on fodder and hair, is, perhaps, of greater epizootiologic significance than its carriage in the bodies of recovered animals. An animal which has had an attack of the disease is resistant to inoculations for from six months to one year. The observations indicating that immunity is short lived can now be explained by the recent discovery that there are at least three types of foot-and-mouth disease which, although clinically indistinguishable, do not protect against one another. The workers have sought in vain to produce an attenuated virus of foot and mouth disease, and until 1925 all attempts to obtain protection by inoculating with the killed virus had failed. However, it has now been established that a useful measure of protection against rabies and canine distemper can be produced by injections of the killed viruses of those diseases. In 1926 Vallée showed that animals could be immunized in a similar way against foot and mouth disease with virus treated with formaldehyde. The committee adds, however, that an immunity which will endure is beyond expectation, for even after an inoculation with the living virus, Rous, Vallée, Carré and Nocard (1921) found that some animals could be reinfected within six months by the same virus. Unfortunately, neither foot and mouth disease nor influenza in man leaves its victims a legacy entitling them to immunity from a further attack of the disease for the remainder of life.

Decrease of Emigration

There has been a substantial decrease in emigration from the United Kingdom during the year ended June, 1928, as compared with the previous twelve months. The excess of British emigrants over immigrants was 114,177 in the twelve months ended June, 1927, and 81,959 for the twelve months ended June, 1928; the number of emigrants in the latter year declined by about 30,000 and the number of immigrants increased by about 2,000. It is of interest that in neither of these years has the amount of emigration to the United States reached the British quota laid down by the U. S. government. The emigrants of British nationality to the United States numbered 22,773 during the year ended June, 1928, as compared with 27,065 in 1927, whereas the British quota (for Great Britain and northern Ireland only) for each of these periods was 34,007. When the movement of British emigrants to all parts of the empire during the same two years is compared, a decrease of 25,632 is shown for the later period. During the first half only of this year the British subjects emigrating to non-European countries numbered 66,925, as com-

pared with 83,740 in the corresponding period of 1927. Immigrants numbered 28,851, as against 29,835 in the corresponding period of 1927. The number of British emigrants to the British empire during the first half of 1928 was about 14,000 less than in the first six months of 1927; the movement to British North America was smaller by 6,248, while decreases of 5,396 and 2,043, respectively, were recorded for Australia and New Zealand.

PARIS

(From Our Regular Correspondent)

Aug. 13, 1928.

Infectious Diseases

An interesting experiment has been performed by MM. A. Pettit, G. Stefanopoulo and V. Frasey, who have succeeded in obtaining "anti-yellow fever" serum through the medium of monkeys and horses. This serum neutralizes the amarillic virus in vitro. The active virus mixture and the antiamarillic serum can be inoculated with impunity in *Macacus rhesus*, a species of monkeys that is known to be sensitive to yellow fever. The authors are carrying on experimental treatment of monkeys.

Trial treatment in experimental trypanosomiasis has been carried on of late by MM. L. Nattan-Larrier and P. Lépine. These authors have shown that animals treated previously with sodium arsanilate combined with tetanus anatoxin seem to present a greater resistance to trypanosomiasis than those treated with sodium arsanilate alone. The tetanus anatoxin strengthens the curative properties of sodium arsanilate. This is particularly marked when it is injected at the same time as the arsenical compound and at the same site.

A recrudescence of foot and mouth disease has been noted. It has made its appearance in the Nièvre region, at Garchisy, and in the Beauce district, in the canton of Brezolles (Eure-et-Loire). It is prevalent in Switzerland, especially in the canton of Grisons.

Progress in the Hospitals

In the hospitals may be mentioned the enlargement of the rectoscopy services in the Hôpital St. Antoine, the modernization of the group of hospitals called the Necker-Enfants malades, the installation of modern methods of disinfection, and improvements in the departmental laboratory of radiology and electrotherapy, rue Lamarck, Paris. The general council of the Seine, acting on a communication from M. Grangier, is considering the creation of a departmental hospital or home for aged men with limited means, in the Château de Giraudon, at Sarcelles (Seine-et-Oise). The home is intended for a special group of the population; namely, old men whose means are too limited to allow them to live in a worthy manner in their own homes.

The Congress of Sanitary Veterinarians

The congress of sanitary veterinarians, organized by the Association française des vétérinaires inspecteurs de la viande, was held recently in Reims under the chairmanship of Senator Beaumont, assisted by M. Breton, president of the Syndicat national des vétérinaires. The session was devoted to the study of the new legislation concerning the prophylaxis of tuberculosis and the control of meats offered for sale.

The International Union for the Study of Demographic Problems

The question of the study of populations was the object of a meeting called, last year, at Geneva, by a number of Americans residing temporarily in France. The meeting was attended by representatives from different countries: historians, geographers, anthropologists, economists, statisticians, biologists, physicians and others. It was decided to create an international association for the scientific study of populations, independent of any spirit of propaganda or of politics. A temporary committee was appointed under the chairmanship of Dr. Raymond Pearl of Baltimore. France was represented by Prof. Léon Bernard. A second meeting has just been held in Paris, at which the temporary committee submitted its report. The delegates present adopted a constitution and by-laws for the new society. The officers elected were: Professor Pearl, president, and MM. Léon Bernard, Gini and Sir Bernard Mallet, vice presidents. The new organization will have its seat in Paris. The first regular assembly will be held in Rome in 1931. The society will establish a bond between investigators in this field, who, until now, have been unacquainted with one another. The society will afford a place for the presentation of articles and for the exchange of views. Its work will be performed by national committees and international commissions. One international commission will study the problem of food resources in relation to population. A second will investigate differentiations in fertility, fecundity and sterility. A third will consider the subject of vital statistics among primitive races.

Congress of the International Federation of Students

The first Congress of the International Federation of Students, which is under the patronage of M. Gaston Doumergue, president of the republic, M. Poincaré, president of the council or cabinet, and MM. Briand, Herriot, Painlevé, Tardieu and Leygues, ministers of foreign affairs, public instruction, war, public works, and the navy, respectively, will be held in Paris, October 11-24. During recent months, the members of the Union nationale des étudiants de France, 55 Quai des Tournelles, Paris, have exerted every effort in order that their fellow students from foreign countries may take with them, on their return home, pleasant memories of their stay in France. M. Antébi, president of the Union nationale, hopes that this first congress will mark the beginning of a rapid development of the federation organized in 1919 by the French "union." Sixteen additional countries, which brings the total number of adherents to forty-eight, have expressed a willingness to send delegates to the Paris congress. It is thought that the federation will soon include all the students in the world. It is the only international organization that represents the interests of students in general.

Subsidies in Support of Medical Research

The municipal council of Paris, on the basis of a report by M. Calmels, has decided to encourage scientific researches and has voted subsidies in favor of the research laboratories in the hospitals; the radiologic laboratories; the medical libraries, and in support of scientific study tours.

The Preparation of Domiciliary Nurses

In view of the numerous services performed by the domiciliary nurses, the municipal council of Paris has decided to encourage by an annual subsidy the schools in which they are prepared. The nursing courses are given by physicians and are supplemented by thorough reviews and short periods spent in the dispensaries. The "model school" for their instruction is located in rue Amyot, Paris. Dr. Rist, agrégé professor of the Faculté de médecine de Paris, before the general assembly of the Association pour le développement de l'assistance aux malades, mentioned that the school has organized also a service of domiciliary aid for patients of very limited means, and that it presents for the examination for the state certificate or diploma all the pupils who have passed successfully their final examinations. He added that the nursing profession is highly respected in France and that its members are recruited from the moral élite of the country. The women nurses are today well prepared to play their part in the homes of the poor, in the hospitals, in the sanatoriums, in the dispensary, in the *goutte de lait*, in the schools, and in connection with the campaign against tuberculosis.

The State Examination for Men and Women Nurses

At a meeting of the general council of the department of the Seine, important matters relative to the personnel of the nurses employed in its psychopathic institutions were discussed on the basis of a communication presented by M. Chausse. The decree, dated June 27, 1922, issued on the basis of the report of the minister of health, provides for the issuance of a certificate or diploma to graduate women nurses. By ministerial decree, under date of Oct. 10, 1923, provision was also made in favor of the pupils of the departmental training schools for nurses and for the women nurses of the psychopathic institutions; their training was approved, and the departmental schools were recognized by the administration as competent for the preparation of candidates for the state examination. In 1926, the competence of the psychopathic institutions of the department of the Seine as a training field for candidates for the state diploma was considered. A course was worked out and put into effect by the decree of Dec. 25, 1927. It includes theoretic instruction and hospital practice in a five year course of study. This course may go into effect the beginning of the school year 1928-1929. In addition, some special courses will be organized.

The Fifth International Christmas Study Tour of the Mediterranean

The fifth study tour of the Mediterranean, organized for the benefit of the medical profession, will take place, as in previous years, during the Christmas season. The participants will meet in Marseilles, Wednesday, Dec. 26, 1928. The tour will begin the morning of December 27 with an inspection of the port. Friday, December 28, will be spent at Toulon, and Saturday, December 29, the study of the climatic resorts and of the therapeutic establishments of the "Blue Coast" will be begun (Hyères, St. Raphaël, Cannes, Le Cannet, Grasse, Juan-les-Pins, Antibes, Nice, Menton, Monaco, Beaulieu). Visits will be paid to the Observatory of Nice and to the Oceanographic Museum in Monaco.

Death of Dr. Saint-Martin

The death of Dr. Saint-Martin, senator from the department of Haute-Garonne, is announced from St. Béat. The deceased was born, May 27, 1871; he was elected in 1912 general councilor of the Haute-Garonne, and in 1919 mayor of St. Béat. He was elected to the senate in 1924. He specialized in problems of hygiene.

BUCHAREST

(From Our Regular Correspondent)

Aug. 30, 1928.

Medical and Public Hygiene Conditions in Bosnia and Herzegovina

Bosnia and Herzegovina are the provinces which were joined to Serbia by the Treaty of Trianon. The majority of the inhabitants are Mohammedans, whose religious creed prohibits them from trying to escape from evils inflicted on them by Fate, or sent by Allah as a punishment. Quackery, practiced by the priests, who inherited their practice from their fathers, used to flourish.

After its occupation the late Austro-Hungarian government considered that its first duty was to organize a sanitation committee. The work of this committee was much impeded by difficulties with the members of the different religious sects.

There were, practically speaking, no healthy people in the country. The women were weakly and anemic, and a good many of them were tuberculous; the majority of the men were syphilitic, pellagrous or leprous. The first act of the new government was to issue a law that henceforth in Bosnia and Herzegovina only a fully qualified person could be a physician, midwife or pharmacist. While in 1879 there were altogether twelve physicians practicing in the whole country, in 1901 they numbered 116, and at present there are about 150 qualified physicians. Besides this a local hygienic commission is working in every district; the members of this commission are, besides the parish and district physicians, the political leaders of the parish council and the district military medical officer. The commission sits once a month to discuss its business, and give an account of the work. The present, postwar Jugoslavian government has further made it the duty of these commissions to increase the number of their members in time of epidemics, and to send out special epidemic physicians.

In order to check the spread of syphilis, the old government ordered the compulsory notification of all cases of syphilis. The new government has granted free treatment for all syphilitic persons at the National Hospital at Sarajevo. For those who for any reason cannot become inmates of the hospital, free medical treatment and free drugs are provided. The county physicians are obliged to prepare monthy records of all syphilitic cases, and an account must also be given of the results of treatment. These measures, it need not be said, have not failed to produce beneficial results. The annals of the National Hospital reveal records of severe tertiary syphilis prior to 1900, while after this date, and particularly in the records of the most recent years, scarcely 5 per cent of all syphilitic patients had tertiary manifestations.

This also is true for smallpox, which has claimed a great number of victims from time immemorial. There were scarcely any natives who had not survived an attack of smallpox. For instance, in 1888, 14,177 cases of smallpox were recorded, but there were also a good many unrecorded cases, and 2,050 resulted fatally. The advance made under the Austro-Hungarian régime is best shown by the figures found in the annals: In 1882 there were 13,500 cases of smallpox with 2,998 deaths. Before the occupation, the ravages of this disease were still greater. The late Austro-Hungarian government started a campaign against smallpox in 1880. It gave rewards to parents who allowed other children to be vaccinated from the pustules of their own children. As the sums distributed were considerable, the people began to acquire a liking for vaccination, and in a few years time they were even ready to pay the fares of the vaccinating physician. General vaccination began to spread, so that in 1889 systematic vaccination was carried out in thirteen villages. Meanwhile revaccination had also become popular in the country. The results thus achieved are best shown by figures taken from the official statistics. While in 1888 14,177 cases of smallpox were notified, in 1895 there were only 3,685, and in 1898 not a single case occurred.

Least was done in the field of obstetrics and in the hygiene of parturition. The majority of the population is of the Mohammedan faith, and no male physician is allowed to examine a wife; for this reason puerperal fever claims many victims. Also various superstitions prevail in Bosnia and Herzegovina even at present. It is the practice of women in some remote parts of Herzegovina to smear the sexual parts with half-made butter. They believe that labor must take place in secret, for if others know of it, the delivery becomes difficult, and the laboring woman has to suffer great pains. This is the explanation of their hiding in poultry houses, sheds and stables, and awaiting labor. There is a race in Bosnia which has the custom of lying on the bare earth while in labor. Nor do the women go to bed after the labor is over, but remain on the soiled rags and dirt where the labor has taken place. In order to allay the pains of labor, they step over the mouth of the oven, and drink water out of their husbands' high boots. Child mortality is greatly increased by the consumption of poppy seeds. A flourishing, pink faced Turkish child can seldom be seen, the reason being that children are given decoction of poppy, from which they fall asleep. The people of Herzegovina are poor; their food consists chiefly of bread made of the bark

of trees and vegetables prepared with oil. The adults are debilitated by indulgence in the tobacco and black coffee habit.

The National Hospital at Sarajevo is built on a wonderful site, with excellent air and water, on the most modern lines, on the pavilion system. A special pavilion provides accommodation for patients with leprosy, whose number is fairly large. The hospital has a large medical staff and well trained nurses. There is a hospital at Mostar, the capital of Herzegovina, and one at Dolna Tuzla. The Jugoslavian government contemplates the erection of several other hospitals in the larger centers of the country.

The new government is doing everything in its power to improve the regrettable conditions described. It is distributing bread and meat among the poor and trying to get them work. In general, an improvement is noticeable also in the field of public hygiene. The government clearly sees that the economic crisis in these provinces was chiefly due to the fact that about a third part of the people were always suffering from diseases, which incapacitated them from working; the reform of public hygiene, therefore, means also the economic prosperity of these provinces, which abound in natural resources, at present unexploited.

ITALY

(From Our Regular Correspondent)

July 15, 1928.

Professor Bottazzi Honored

On the completion of twenty-five years of teaching, special honors were recently conferred on Prof. Filippo Bottazzi, physiologist at the University of Naples, at a meeting held for this purpose. Senator Fano of Rome, his former teacher, gave an account of the ten years that Professor Bottazzi spent at the Institute of Physiology in Florence. It was during these years that he pursued his fundamental researches on the red corpuscles and their metabolism, carried out researches on the physicochemical constants of the blood, and began his researches on the heart and muscles, which culminated in the acceptance of the theory of sarcoplasm.

Professor Herlitzka, physiologist of Turin and chairman of the arrangements committee, gave a short biography of Bottazzi, mentioning that from his work in Florence he accepted a call to Genoa and later to the University of Naples, where he is now located. During the war, and up to 1923, he was also director of the physiologic department of the Sezione Zoologica in Naples. The scientific publications of Professor Bottazzi number about 300, among which is a treatise, in two volumes, on physiologic chemistry. He is also the author of the Italian translation of Forster's treatise and of Edinger's lectures. It is due to his efforts that the Facoltà di Medicina of Naples created the chair of physiologic chemistry. He was a member of the Comitato scientifico italiano per lo studio dell'alimentazione and also of the Commission scientifique interalliée du ravitaillement. At the close of his address, Professor Herlitzka presented to Professor Bottazzi a volume of biologic writings that had been prepared escpecially for the occasion.

The First Exhibit to Illustrate the Crusade Against Tuberculosis

On the occasion of the sixth conference of the Unione internazionale contro la tubercolosi, to be held in Rome, the first exhibit in illustration of the crusade against tuberculosis will be organized. It will serve to show visitors the progress made in the fields of hygiene and prophylaxis, and to establish direct relations between the buyers and the producers of the various specialized sanitary products. The exhibit will comprise four sections: (1) antituberculosis organization (the distribution of dispensaries, preventoriums and sanatoriums for the prevention and treatment of the disease throughout Italy); (2) instruction in the prophylaxis and treatment of tuberculosis in industrial and rural districts; (3) domiciliary prophylaxis (working organizations for tuberculous patients, and special lodgings for their families), and (4) houses of workmen and rural homes, and their hygienic installations.

Prizes in Ophthalmology

For the best articles on certain special subjects, the Società italiana di oftalmologia will confer thirteen prizes this year. Among them the following are the most important: the international Cirincione prize of 20,000 liras and two gold medals, to be bestowed for the best original article written in 1928 on any ophthalmologic subject, and a prize of 5,000 liras offered by the Ente per la profilassi delle malattie oculari, for the best monograph on the geographic distribution of trachoma. The latter prize is likewise of international scope and is open to the scientists of all nations, provided they are under 45 years of age and are not head professors of the scientific departments with which they are connected.

The Injection of Alcohol into the Gasserian Ganglion

At a recent session of the Accademia reale di medicina of Turin, Dr. A. M. Dogliotti reported a personal case of neuralgia of the fifth cranial nerve, in which the injection of alcohol was employed. According to the speaker, in the incipient stages of essential neuralgia of the fifth cranial nerve, if the ordinary medical treatment fails, it is advisable to try the injection of alcohol into the peripheral branches. In the obstinate types, radicotomy and the injection of alcohol into the gasserian ganglion may be employed. Radicotomy is not commonly resorted to in Italy. The speaker has used the second method in twenty cases, with recovery. In five cases in which he produced anesthesia of all three branches, neuroparalytic keratitis developed in three, which disappeared in a few weeks. In one subject, however, there remained a slight opacity of the cornea, with two-tenths reduction of vision. From researches on normal craniums, he has found that in 30 per cent of the cases it is impossible to penetrate the foramen ovale by following the lateral route; he follows the anteroinferior passage. He never injects more than 2 cc. of alcohol at a dose.

The Medicolegal Value of Proofs of Personal Identity

Professor Lattes, director of the Institute of Legal Medicine of the University of Modena, discussed recently, before the Società Medica of Pavia, the value of proofs of personal identity. The speaker surveyed the various indirect proofs to which one commonly has recourse in such cases and analyzed their value. Testimonial evidence introduces many contradictory elements, for the reason that the witness may be influenced against his will by suggestion, and because such evidence usually concerns trivial features of physiognomy that may be counterfeited. Psychiatric proofs are also deceptive, for the diagnosis of simulation is rather difficult, and the handwriting is subject to the most varied alterations, voluntary and pathologic. The speaker expressed the view that the most reliable proof of personal identity is based on dactyloscopy and outstanding physiognomic features. In the practical use of dactyloscopy, however, a previous recording of the finger prints is needed with which to make comparison. The nose and the pinna of the ear are the most reliable elements for the demonstration of personal identity. Proofs based on the determination of blood groups are also reliable. This method has been widely used with positive results.

The Congress of Hydrology and Climatology

Under the chairmanship of Prof. Francesco Sgobbo, the Nineteenth National Congress of Hydrology, Climatology, and Physical and Dietetic Therapy was held in the Campi Flegrei, at Naples. The first part of the congress was devoted to the geologic study of the zone in which the meeting was held. Then followed two papers on the subject "The Crenologic

Agents of the Campi Flegrei"; Professor Zamborimi of the University of Naples discussed the chemical and the chemico-physical aspects of the subject, and Professor Marfori, incumbent of the chair of materia medica and pharmacology, dealt with the biologic and therapeutic sides of the question. Prof. Raffaello Nasini of the University of Pisa took as his topic "The Mineral Waters in the Light of Modern Researches," and emphasized the need of more intensive study of hydrology by the use of modern agents and apparatus. Professor Casagrandi of the University of Padua discussed "The Action of Oligometallic Waters on Pyogenic Organisms in Vitro and in Vivo."

The topic "The Climatology of the Campi Flegrei" was treated from the standpoint of the physicist by Professor Platania, and from the point of view of the clinician and the biologist by Professor Boeri, director of the third Clinica Medica of the University of Naples. The latter speaker, after pointing out the characteristic features of the climate of this region, called attention to the various diseases for which it is of therapeutic value. Other papers were read by Professor Grimaldi, on "Mud Baths and Diathermy"; by Professor Ascione on "The Bacterial Flora of Pozzuoli Sulphur," and by Professor Della Cioppa on "The Organization of Modern Health Resorts."

BERLIN

(From Our Regular Correspondent)

Aug. 11, 1928.

Vital Statistics

The even course of the development of the German population, which was suddenly interrupted by the war and its sequels, is considered in an article in *Wirtschaft und Statistik*. The extremely low birth rate of the war years and the decline of the postwar period, together with the losses in able-bodied men, have materially changed the distribution of the various age groups. These after-effects of the war will be observable in the character of the population for years to come. As the age groups most affected by the decline in the birth rate now grow to adulthood, the thinness of their ranks in the various fields of economic and cultural endeavor is becoming noticeable. The influence on the number of pupils is also perceptible. From 1930 on, the number of apprentices will begin to show a diminution as the result of the decline in the birth rate, and in about ten years the market for houses and apartments will be influenced by a decline in the number of marriages. As the yearly number of births has not yet come up to the prewar record, we shall have to be content with smaller age groups for some time to come. The excess of boys over girls, in the first years of life, is now even greater than it was before the war. According to the last prewar census, of each thousand children under 1 year of age, 505 were boys; in 1925, there were 509 per thousand. For the ages 1 to 2, the corresponding figures were 503 and 509. The birth losses of the war period affected the census of 1925 almost exclusively in the 6 to 10 age groups. In the 7 and 8 year olds, the numbers are not equal to 50 per cent of the prewar status. The 10 to 25 age groups were not markedly influenced by the effects of the war. The fact that the age groups of 10 to 15 years are small in numbers as compared with the corresponding age groups of the prewar period can be explained as the effect of a decline in the birth rate that had set in during the last prewar years. In the 15 to 25 age groups (that is, in the persons born during the first decade of this century), the increase in numbers is particularly high.

Excess of Women over Men as a Result of War

Age Groups	1925	1910
25 to 30	1,151	1,002
30 to 35	1,260	1,001
35 to 40	1,180	1,003
40 to 45	1,108	1,022
45 to 50	1,068	1,045

The tabulated age groups reflect the losses on the battle fields, which affected most the men of the present 30 to 40 years age groups. In these groups marked declines in comparison with the year 1910 are observable. The losses in the ranks of the men have produced in these age groups a marked excess of women over men, as is shown in the accompanying table.

This excess of women of marriageable and industrial age is responsible, in part, for the marked changes in the position of women in the social and industrial life of our times.

The age groups that were not immediately affected by the war losses are larger numerically than the corresponding groups of the prewar period. This is explainable in part by the growth of the population and in part by the reduced mortality.

We have today more adults and fewer children than before the war. In 1910, 33.9 per cent of the total population of the *reich* was under 15 years of age; according to the census of 1925 there was only 25.7 per cent. In 1925, the number of children of school age (6 to 14) was about one fourth less than in 1910. Their proportion of the total population has dropped from 17.5 per cent to 12.3 per cent. The total number of persons under obligations to attend continuation schools (ages 14 to 18) is 5,250,000, or 13.8 per cent more than at the last prewar census. The number of persons subject to fine or imprisonment (lower age limit raised from 12 years to 14 years) is almost 5,800,000 greater than in 1910. This increase applies only to the part of the population over 18 years of age; the group of juveniles (ages 14 to 18) had decreased.

The number of minors in the German *reich* is 23,900,000, or 38.2 per cent of the total population, as compared with 45.3 per cent in 1910. The smaller proportion of children to the total population is caused in the large cities by the low birth rates, and by the immigration, which brings in chiefly adults. The importance of the relative proportions of the social classes may be seen by studying the proportion of children and the proportion of laboring population in the large cities. As the proportion of laboring population increases, there is an increase in the proportion of children, under 6 years of age, to the total population.

Statistics as to Marriage

The changes in the various age groups are reflected in the marriage statistics. The smaller proportion of children and juveniles has led to a decline in the proportion of unmarried persons, whereas the increase in the proportion of adults has resulted in an augmentation of the percentage of married persons. As compared with the census of 1910, the number of unmarried men has decreased about 750,000, or 4.4 per cent, while the number of unmarried women has increased by 26,000, or 0.2 per cent. The proportion of unmarried men to the total number of men is lower in all age groups, as compared with the prewar period. The reverse is true with women, particularly in the middle age groups, which would naturally be most affected by the war losses in men.

The number of married persons has increased by 4,600,000, or 22.0 per cent. This increase affects the two sexes about equally. The proportion of married persons to the total population has thus increased from 36.1 per cent to 40.8 per cent. Of the total increase in married men, which, in contrast with the year 1910, amounts to 2,309,407, it may be said that about 1,850,000 are due to changes in the relations of the age groups and about 460,000 to the increased readiness of men to marry. Further, the fact that general military service has been abolished has made it possible for men to marry earlier than in 1910. Unfavorable housing conditions have not checked marriages to the extent that is commonly supposed. This is explained, in part, by the fact that the financial preconditions for marriage are not so difficult to fulfil when husband and wife both con-

tinue to be gainfully employed and temporarily forego the establishment of their own household. The greater readiness to marry is noted in all age groups.

The proportion of married women to the total number of women has diminished in almost all age groups as a necessary consequence of the excess of women over men. If the women had had the same opportunities to marry that they had in 1910, we should have today about 13,200,000 million married women; that is to say, about 480,000 more than there actually are. If we consider that the 12,700,000 married women reported by the census is larger than it would be if men were not more willing to marry, we can place the number of women doomed to spinsterhood, in consequence of the war, at about 900,000.

The number of both widows and widowers has increased. The widowers have increased by 99,077, or 12.7 per cent, and the widows, owing to the war, by 499,167, or 21.7 per cent. In women, the increase is chiefly in the middle age groups.

The number of divorced persons reflects the increased tendency to divorce that has marked the postwar period. The number of divorced men has increased by 54,706, or 119.2 per cent. The number of divorced women has increased by 99,790, or 120.6 per cent. The increase is especially noticeable in the younger age groups.

Increase of Mental Patients in Prussia and Saxony

From Jan. 1, 1922, to Dec. 31, 1925, the number of mental patients in various sections of Germany increased appallingly. There were in the Prussian institutions, on Jan. 1, 1922, 32,895 male and 34,081 female patients, which included 10,602 male and 9,223 female idiots, and 4,388 male and 4,517 female epileptics. On Dec. 31, 1925, these figures had increased to 40,744 male and 41,812 female mental patients, which included 12,910 male and 11,540 female idiots, and 5,648 male and 5,191 female epileptics. Among the new patients in 1922, there were 3,829 males and 4,170 females in whom hereditary disposition, and 4,482 males and 480 females in whom alcoholism was demonstrated as the cause of mental disturbance. In 1925, these figures had increased to 5,066 males and 5,442 females, and 6,084 males and 535 females in whom hereditary disposition and alcoholism were established as the causes of mental disease, respectively.

In the province of Saxony, there were, on Jan. 1, 1922, 2,401 male and 2,287 female mental patients, which included 905 male and 785 female idiots, and 315 male and 317 female epileptics. On Dec. 31, 1925, however, there were 3,087 male and 2,927 female patients, which included 1,179 male and 1,030 female idiots, and 422 male and 370 female epileptics. Among the new patients in 1922, there were 192 males and 175 females in whom hereditary disposition, and 66 males and 8 females in whom alcoholism was demonstrated as the cause of mental disorders. In 1925, these figures had increased to 493 males and 276 females, and 134 males and fifteen females in whom hereditary disposition and alcoholism were established as the causes of mental disease, respectively.

Marriages

WILLARD EMERSON AUSTEN, Jersey City, N. J., to Miss Estelle Randolph Bolling of North Sidney, N. S., Canada, August 29.

NEWDIGATE M. OWENSBY, Atlanta, Ga., to Mrs. Edna Haslup Coleman of Washington, D. C., July 26.

HARLAN FISHER HAINES to Miss Margaret Pennington Jones, both of Philadelphia, June 24.

WINFRED J. WRIGHT, Skippack, Pa., to Miss Bertha Kuhn Wentzel of Topeka, Kan., June 18.

LLOYD BENNETT YOUNG to Miss Esther Gertrude Austin, both of Detroit, August 1.

JOHN A. SWEENEY, Philadelphia, to Miss Olive Mann of Norfolk, Va., June 30.

Deaths

George Palmer McNaughton ✠ Detroit; Rush Medical College, Chicago, 1900; member of the American College of Physicians; formerly associate professor of medicine, Detroit College of Medicine and Surgery; on the staffs of the Jefferson Clinic and Diagnostic Hospital and the City of Detroit Receiving Hospital; aged 50; died, August 21, at Gladwin, Mich., of heart disease.

John Archibald Smith ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1899; medical secretary of the National Tuberculosis Association and secretary of the American Heart Association; formerly secretary of the New York State Department of Health and bacteriologist to the Saranac Lake Board of Health; aged 51; died suddenly, August 20, of heart disease.

Reynolds Cornelius Mahaney, Owosso, Mich.; University of Michigan Medical School, Ann Arbor, 1900; member of the Michigan State Medical Society; past president of the Shiawassee County Medical Society; health officer of Owosso; aged 56; on the staff of the Memorial Hospital, where he died, September 4, of embolism, following pneumonia.

Joseph Ambrose Patrick Bacon, Lawrence, Mass.; Baltimore University School of Medicine, 1891; member of the Massachusetts Medical Society; served during the World War; aged 61; medical superintendent of the Lawrence Municipal Hospital, where he died, June 5, of coronary occlusion.

William Clark Griffith, Weleetka, Okla.; Jefferson Medical College of Philadelphia, 1888; member of the Oklahoma State Medical Association; health officer of Weleetka; aged 66; died, August 16, at Terrell, Texas, of cirrhosis of the liver and dilatation of the heart.

Peter H. Stultz, Supply, Okla.; College of Physicians and Surgeons, Baltimore, 1895; member of the Oklahoma State Medical Association; on the staff of the Western Oklahoma Hospital; aged 57; died, August 23, at Halstead, Kan., of heart disease.

Eugene David Rosewater ✠ Cleveland; Western Reserve University School of Medicine, Cleveland, 1912; aged 44; died, August 22, at the Kingston (Ont.) General Hospital, as the result of an automobile accident, which occurred near Napanee, Ont.

Wilbur F. Stirman, Owensboro, Ky.; St. Louis Medical College, 1879; member of the Kentucky State Medical Association; formerly on the staff of the Owensboro City Hospital; aged 72; died, August 24, of cirrhosis of the liver.

Thomas S. Slater ✠ Corsicana, Texas; Medical Department University of Tennessee, Nashville, 1892; Medical Department of the Tulane University of Louisiana, New Orleans, 1896; aged 60; died, July 1, of nephritis.

Ellen Hedrick ✠ Mansfield, Ark.; Chicago College of Medicine and Surgery, 1908; member of the Oklahoma State Medical Association; aged 54; died, March 22, at the Barnes Hospital, St. Louis, of pneumonia.

Myer Arthur Persky ✠ Providence, R. I.; Tufts College Medical School, Boston, 1915; served during the World War; on the staffs of the Homeopathic and Miriam hospitals; aged 36; died, August 31, of heart disease.

Joseph Henderson Caldwell ✠ Charlotte, N. C.; North Carolina Medical College, Charlotte, 1914; served during the World War; on the staff of the Presbyterian Hospital; aged 38; died, August 17, of uremia.

Arthur Knox Doig ✠ Nyack, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1901; on the staff of the Nyack Hospital; aged 53; died, August 10, as the result of an automobile accident.

Nicholas John Pippert, St. Louis; Barnes Medical College, St. Louis, 1911; member of the Missouri State Medical Association; aged 47; died, August 17, of shock and skull fracture, cause unknown.

Gustav A. Schoening ✠ Trenton, N. J.; University of Rostock, Germany, 1884; on the staff of St. Francis' Hospital; aged 69; died, August 14, of carcinoma of the mediastinal and cervical glands.

Thomas Robert Rubush, London, Ind.; Medical College of Indiana, Indianapolis, 1879; aged 74; died, August 13, at the Indiana Christian Hospital, Indianapolis, following an operation.

Walter Hollis Everhart, Columbia, S. C.; University of Maryland School of Medicine, Baltimore, 1903; formerly post-

master of Newton, N. C.; aged 50; died, August 12, of angina pectoris.

August A. Bourquin, Denver; University of Paris, France, 1883; University of Virginia Department of Medicine, Charlottesville, 1889; aged 74; died, January 14, of chronic myocarditis.

Charles William Schwartz, Topeka, Kan.; Northwestern University Medical School, Chicago, 1897; member of the Kansas Medical Society; aged 57; died, August 20, of splenic anemia.

James Henry Seaton, Newton, Kan.; Kentucky School of Medicine, Louisville, 1866; aged 89; died, August 7, at the Bethel Deaconess Home and Hospital, of cerebral hemorrhage.

William G. Aikin, Stockton, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1901; member of the Medical Association of the State of Alabama; aged 71; died, June 25.

Alfred E. Regensburger, San Francisco; Medical Department of Columbia College, New York, 1872; aged 77; died, August 17, at St. Francis' Hospital, of cerebral hemorrhage.

John Aubrey Crewitt, Newtown, Pa.; College of Physicians and Surgeons, Baltimore, 1876; for five years county school director; aged 74; died, August 27, of cerebral hemorrhage.

John Nelson Bell, New Burlington, Ind.; Medical College of Ohio, Cincinnati, 1888; member of the Indiana State Medical Association; aged 70; died, September 1, of angina pectoris.

John E. Clinton, Whittington, Ill.; American Medical College, St. Louis, 1896; aged 64; died, August 31, at the home of his daughter in Benton, of carcinoma of the liver.

Lewis S. Greene, New Site, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; member of the Mississippi State Medical Association; aged 51; died, June 17.

Charles Sherman Estep, Cincinnati; Pulte Medical College, Cincinnati, 1891; aged 59; died, August 23, of chronic nephritis, cerebral hemorrhage and endocarditis.

Julius C. McCormick, Saginaw, Mich.; University of Michigan Medical School, Ann Arbor, 1879; aged 81; died, August 26, of valvular heart disease.

David D. Britton, Church Hill, Tenn.; Medical Department University of Tennessee, Nashville, 1897 and 1885; aged 79; died, August 23, of pneumonia.

Leo Powers Burke, Hilton Village, Va.; Georgetown University School of Medicine, Washington, D. C., 1922; aged 29; died, July 6, of angina pectoris.

Gustav A. Eisengraeber, Granite Falls, Minn.; Minnesota College of Medicine and Surgery, Minneapolis, 1901; aged 70; died, August 8, of heart disease.

Thomas J. Jackson, St. Charles, Mo.; Meharry Medical College, Nashville, Tenn., 1905; aged 45; died, February 16, of chronic interstitial nephritis.

Herschel C. Robinson, Martinsville, Ind.; University of Louisville (Ky.) School of Medicine, 1872; aged 77; died, August 31, of myocarditis.

James Henry Preston, Hampstead, Md.; Washington University School of Medicine, Baltimore, 1880; aged 78; died, August 23, of myocarditis.

Alvin W. Boucher, Tipton, Calif.; Miami Medical College, Cincinnati, 1873; aged 78; died, April 9, as the result of a railroad accident.

Clement Eugene Pugh, Grove Hill, Ala.; Medical College of Alabama, Mobile, 1889; aged 62; died, June 12, of chronic nephritis.

William L. Cole, Oxford, Mich.; Michigan College of Medicine, Detroit, 1881; aged 71; died, January 19, of heart disease.

Price Moody, Bartlett, Ohio; Starling Medical College, Columbus, 1895; aged 70; died, August 7, of arteriosclerosis.

Charles Andrew Lattin, Hastings, Fla.; American Eclectic Medical College, Cincinnati, 1889; aged 84; died in July.

Walter Woodman, Cambridge, Mass.; Harvard University Medical School, Boston, 1883; aged 76; died, September 4.

Bernard J. Fehrenkamp, Frelsburg, Texas; Jefferson Medical College of Philadelphia, 1876; aged 73; died, April 27.

Julian Gyula Ullmann, Chester, Pa.; University of Paris, France, 1881; aged 74; died, September 4, in Germany.

Kossuth L. Morgner, St. Louis; American Medical College, St. Louis, 1878; aged 79; died, July 30, of uremia.

J. L. Outlaw, Medon, Tenn. (licensed, Tennessee, 1889); aged 69; died suddenly, August 31.

Correspondence

THE ORGANISM OF VINCENT'S DISEASE

To the Editor:—I have recently read in THE JOURNAL (July 28, p. 246) that the microbe of Vincent's disease "had been described by Rauchfuss in 1893 and by Plaut in 1894." I had never before seen the name of Rauchfuss in the history of Vincent's disease. As for Plaut, this author did not "describe" or even see *Bacillus fusiformis* in his paper in the *Deutsche medizinische Wochenschrift*, 1894, p. 920. He did not describe the illness. If you consult that paper, you will easily see the proof of it; and that conclusion has been everywhere approved.

I have described the etiology, the bacteriology, the clinical characters and varieties of angina, the diagnosis and even the treatment of that illness. I was also the first to study the fusospirochetal infection in hospital gangrene (1896), in tropical ulcers, etc.

Plaut merely mentioned in 1894 that he had seen "Miller's bacilli and spirochetes" with cocci, streptococci, etc.

But Miller has never found nor described *Bacillus fusiformis*. He has himself called the bacteria seen by Plaut: "Miller's Komma bacillus" and "Bacillus von Miller" (Die Mikroorganismen der Mundhöle, Leipzig, 1892, pp. 66 and 67; figs. 18, 19 and 20).

Those micro-organisms are neither *Bacillus fusiformis* nor *Spirochaeta vincenti*. Moreover, Plaut stated in 1895, after my observations, that he had seen *Spirillum sputigenum (Gaz. d. Hôp.*, 1905, number 27, p. 315). But that spirillum is "in form von Kommaänlich gebogenen" Stäbchen (Miller, loc. cit., p. 64); it is then wholly distinct from *Bacillus fusiformis*.

I am sorry that in your important publication my name was unjustly mentioned after that of another who did not see *Bacillus fusiformis* or the specific spirochete.

PROF. H. VINCENT, Collège de France, Paris.

THE INJECTION TREATMENT OF VARICOSE VEINS

To the Editor:—In THE JOURNAL, August 4, you presented an editorial on the subject of "The Injection Treatment of Varicose Veins." This was thorough and complete in every detail. For the past four years I have been more or less of a pioneer in this work throughout the Northwest and have been fighting for it continually. Today more than 50 per cent of the physicians of Minneapolis have adopted this mode of treatment. In your editorial you mentioned the fact that I had reported good results from the use of "sodium salicylate." The facts are that I have used every preparation that has been advocated to any great extent in any of the leading clinics of the world in an effort to try them all out and select the good from the bad. Professor Sicard of Paris has been the outstanding advocate of the sodium salicylate method and in reality he was the first to use sodium salicylate. All of his students who have gone throughout Europe and England have continued using his preparation and technic.

I have made an extensive survey of the literature and I find the sodium salicylate method used probably more than any other throughout France, England and Scandinavia. I myself do not like it and merely mentioned it in my reports as a solution which had been used by leading men and which did give good results. My particular criticism and objection to the use of sodium salicylate is the intense cramplike pain which it stimulates. This comes on about three minutes after the injection and lasts, as a rule, about ten minutes. Its intensity is much greater than that following any of the other solutions, even including 20 per cent sodium chloride, which I have used a great deal. For this reason, I have discarded sodium salicylate entirely

and believe that there are several other solutions far superior. At present I am using 20 per cent sodium chloride in about 50 per cent of my cases and a sugar preparation after the formula of Dr. Nobl of Vienna, which is a 75 per cent invert sugar and 5 per cent cane sugar, in about 40 per cent of my cases. In the remaining 10 per cent I use quinine dihydrochloride and urethane, with an occasional dose of mercuric chloride, 1 per cent. This I believe is brought out in detail in my next article, which you have now awaiting publication.

H. O. MCPHEETERS, M.D., Minneapolis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PSYCHOLOGIC DISTURBANCE AFTER TRAUMA

To the Editor:—A man, aged about 57, a physician, was hit by a heavy truck while in his own automobile, about seven months ago. Unconscious, he was taken to a hospital, remaining unconscious for about two and one-half hours. X-ray examinations did not reveal a fracture of the skull, but there was a severe concussion and contusion of the brain, with a slight oozing of blood from the small capillaries. During the first night, after he regained consciousness, his chief complaint was a severe buzzing and a throbbing in tempo with his heart beats. The injury sustained was to the right side of the skull. He remained in bed at the hospital for seven weeks. When he left the hospital the buzzing sound turned into a hissing sound; as he explained, it is just as if he were standing in front of a boiler with escaping steam. Treatments given by neurologists and otologists were of no avail. He finally consulted a prominent neurosurgeon, who advised him to enter the hospital, where several lumbar punctures were made for diagnostic purposes and to relieve pressure, as he thought there were adhesions. The results were negative. Encephalography was suggested and was performed on two occasions within six weeks, relieving the condition only temporarily. He was finally advised that time and rest will eventually cure this condition, but the hissing sound and the throbbing seem to get more audible as time advances, headaches, chiefly on the left side are unbearable, and insomnia is driving the man almost to insanity. He has developed a suicidal mania. Is there anything you could suggest that might be done to overcome this condition? Kindly omit name. M.D., Philadelphia.

ANSWER.—The history of the case given suggests that practically everything possible has been done in an effort to discover some lesion responsible for the symptoms. Under these circumstances the wisest plan appears to be that of following the recommendation for continued rest. The marked emotional reaction to the discomfort may be an indication that some psychogenic factors are involved and it can do no harm to consult a competent psychiatrist.

VICARIOUS MENSTRUATION AND THE MENSTRUAL CYCLE

To the Editor:—A married woman, aged 21, began her menses at 13 years of age. Her periods were regular and of normal duration, without discomfort. She had one normal child six years ago. Three years ago she had an illness characterized by high fever and general aching. She was confined to bed about one week and was quite weak subsequently. This attack was diagnosed influenza by her physicians. Since then her menses have been irregular at two to six week intervals, lasting from one-half to one day. The flow is slight and is accompanied by occipital headache and aching between the shoulders. The headache continues a week or longer and is usually relieved by spontaneous epistaxis lasting from a few minutes to several hours. The patient is otherwise healthy. Physical examination reveals a slightly enlarged uterus. Is this a case of vicarious menstruation? What treatment can you suggest? Please omit name. M.D., Indiana.

ANSWER.—According to the facts given in the query the epistaxis occurs after the cessation of the menstrual flow; hence this is not a case of true vicarious menstruation. The latter term should be applied only when extragenital bleeding occurs at regular intervals which correspond with the menstrual periods. If the uterine menstrual flow is absent the vicarious menstruation is known as the substitutional type, whereas if the extragenital bleeding accompanies menstruation per vias naturales it is known as the supplementary type. A change in the menstrual cycle such as this patient experienced is not uncommon, but the etiology is unknown in most instances. Because of this there is no specific treatment for the condition. Gland preparations have proved to be unsatisfactory and roentgen-ray therapy is still in the experimental stage.

OBSTETRICS BY APPOINTMENT

To the Editor:—My practice has been limited strictly to internal diseases for thirty years and I have neglected to keep au fait in the recent progress of obstetrics. Now I learn that obstetricians, in routine practice, make a date for confinement, evidently to occur somewhat earlier than at full term. On the chosen date, usually in the forenoon, the cervix is dilated and labor eventually incited by solution of pituitary. The patient (under such conditions the term "patient" applies) is kept in a more or less modified twilight sleep. And if now parturition has not taken place within, say, eight hours, a forceps delivery is resorted to. The reason for this practice is stated to be that during the last days of gestation the child in utero gains rapidly in size and in weight, and parturition is rendered much more difficult and tedious, endangering life of mother and child. Of course, the work and worry of the obstetrician is also relieved to a great extent. The procedure fulfils the ancient humane medical demand: "Cura cito, tuto et jucunde." It also meets the modern principle: "Corriger la nature." Is it a fact that the child in utero grows during the last few days of gestation to a marked degree, involving increased difficulty in giving birth? Would it not be logical to induce confinement say about three or four weeks before full term? Could a mother be accused of hazarding the child's and her own life if she wishes to carry to full term? Please omit name. M.D.

ANSWER.—It is not good practice to induce labor as a routine at or before term. Nature can safely be trusted to carry women through parturition even if it occurs a few days later than the time we think it should. It is rare that a woman actually goes over term. There are cases, however, which must be detected and a sluggish uterus urged to action before the child has overgrown too much or before it has died like an apple on a bough. Here fine obstetric discrimination is required.

LEVENTIS' HUMANIZED SERUM

To the Editor:—Kindly give your opinion of Leventis' Humanized Serum. A prominent specialist in tuberculosis seems to advocate its use, but from other sources I have heard that it is of no value. Please omit name. M.D., Ohio.

ANSWER.—Dr. Leventis assumes on the basis of vaguely cited "innumerable experiments" of eighteen years' duration that it is possible to render naturally immune animals susceptible to tuberculosis by injecting the serum of a susceptible animal. Without going into the unlikelihood of this exaggerated importance of the serum alone in the complex matter of immunity, any well trained physician would wish to see carefully recorded experiments, many times repeated, and by others than the original investigator, and reported in the usual mediums of scientific exchange, before accepting this hypothesis. The United States Public Health Service has not authorized interstate sale of the Leventis serum.

EXAMINATION OF SAPHENOUS VEIN BEFORE INJECTION FOR VARICOSITY

To the Editor:—Your instructive editorial on varicose veins is not clear in its anatomy. You suggest compressing the long saphenous digitally at its "junction with the femoral vein at the fossa ovalis." If the fossa ovalis is, as Grey says, at the point of the foramen ovale, how can one compress it to carry out the Trendelenburg technic in diagnosis?

W. H. DEWEY, Moville, Iowa.

ANSWER.—The long saphenous vein is situated in its entire course subcutaneously. It can therefore be compressed in any part of its course. The fossa ovalis referred to is an oval depression in the crural fascia, just below Poupart's ligament, into which the long saphenous vein dips in order to reach and join the anterior medial wall of the femoral vein. A glance at the illustration on page 471, volume II, Spalteholz, will give a clear idea of the anatomy of the fossa ovalis, as well as of the rationale of digital compression at this point in the so-called Trendelenburg test. Since "fossa ovalis" means no more than an oval depression, there is no good reason why there should not be one in the skull. The "foramen ovale" is a passage in the skull for the third branch of the trigeminal nerve and obviously has no relation to the subject in question.

DIATHERMY AND URETHRAL STRICTURE

To the Editor:—Can you give me definite information pertaining to the treatment of strictures of the urethra by diathermy (i. e., nonsurgical) as to the mode of procedure in detail, including name of machine used; strength of current, for how long a time per treatment, and results obtained? Please omit name. M.D., New York.

ANSWER.—The application of diathermy to urethral strictures has not been shown to have merit. Evidence is not offered by theoretical considerations or clinic experience to support claims for a favorable influence of this modality in such instances.

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SODIUM CHLORIDE IN THE NEPHRITIC DIET

To the Editor:—Please tell me the scientific reason for not allowing salt (sodium chloride) in the food of nephritic patients. Is there a scientific reason, and what is it? Please omit name.

M.D., North Carolina.

ANSWER.—The metabolism of nephritis as understood at present does not involve sodium chloride except in the presence of edema. The cause of edema has been intensively investigated and many theories have been evolved to explain it, but as yet a completely satisfactory explanation is not available. When edema is present there is definitely a retention of sodium chloride in the body, mainly in the tissues containing the excess water. This is probably due to the physicochemical changes involved. It has been found that excess salt in the food is likely to increase edema and that diminution of the salt intake is frequently followed by diuresis and lessening of the edema.

TREATMENT OF CAVITY IN PULMONARY TUBERCULOSIS BY ARTIFICIAL PNEUMOTHORAX

To the Editor:—Please outline briefly the treatment of pulmonary tuberculosis with a moderate sized cavity. Is it necessary in every case with cavity formation to use artificial pneumothorax? Kindly omit name.

M.D., Texas.

ANSWER.—Cavity formation, of whatever size, means advanced pulmonary tuberculosis. If the tuberculous process has come to a standstill, with symptoms of activity in abeyance, it is likely that no further treatment is, for the moment, indicated, even though the cavity is relatively large. In the presence of activity, however, even though the cavity is small, energetic measures may be necessary to check the onward progress of the disease. The best means of controlling active tuberculosis is lung collapse, otherwise known as artificial pneumothorax. Many cases of tuberculosis of the lungs heal spontaneously, cavity or no cavity. Nevertheless, a cavity with active processes in the lungs always means further extension of the disease. Lung collapse is now recognized by all workers in tuberculosis as the best means of checking the disease.

BLADDER STONES AND MINERAL WATERS

To the Editor:—Is there any reason for thinking that the results obtained at Wildungen in the treatment of bladder stones are more successful than the results obtained by good urologists elsewhere? Have the waters at Wildungen specific properties which make them particularly valuable in the treatment of this condition? Do the urologists at Wildungen employ any particular nonoperative procedures in the treatment of bladder stones which are not employed by good urologists elsewhere?

M. B. JARMAN, M.D., Hot Springs, Va.

ANSWER.—If treatment of bladder stones is interpreted as the employment of a method or methods to remove such concretions by other than operative means, it must be stated that we do not know of any mineral water or any other fluid that would be apt to dissolve vesical calculi. So far as the prevention of recurrence is concerned, our limited knowledge of the etiology of urinary concretions does not yet permit the development of a rational prophylaxis. With a certain degree of rationality, the treatment of an existing cystitis has to be insisted on. There is no evidence for supporting the claim that certain mineral waters have specific properties in preventing the formation of urinary concretions. Results in dealing with vesical calculi depend on the judgment and skill of the operator and not on geographic location.

SAFE DRINKING WATER

To the Editor:—Please let me know the proper amount of iodine, potassium permanganate, and chlorine to make polluted water safe for drinking purposes.

M. W. LYONS, M.D., Sentinel Butte, N. D.

ANSWER.—The amount of any disinfectant necessary to render a polluted water safe for drinking depends on the extent of contamination and on the chemical composition of the water, particularly the content of organic matter. In general, enough of the disinfectant must be added to leave a slight excess. The amount of chlorine (figured as free chlorine whether added as chlorinated lime, sodium hypochlorite or liquid chlorine), used for treatment of public water supplies in this country varies from 0.15 to 9.75 parts of chlorine per million parts of water. However, such supplies have either been filtered or are of reasonably good character. Highly polluted waters cannot be successfully treated without the use of large doses of chlorine, with resultant disagreeable tastes due to the compounds formed by the action of the chlorine on organic matter. Potassium permanganate has been used for treating small quantities of water. A sufficient amount must be added so that a slight but distinguishable pink color will persist for a number of hours. Like chlorine, this chemical is an oxidizing agent and will attack both living and dead organic matter. Hence, the quantity of permanganate required will vary with the organic content of the water and must be determined by trial. Iodine is not to be recommended for treating a polluted water intended for human consumption. Halazone, N. N. R., or tablets of halazone containing a small amount of sodium carbonate and sodium chloride were developed during the war for extemporaneous sterilization of water (Halazone is another organic compound—*p*-sulphone-*di*-chloramido benzoic acid—which yields active chlorine [Cl$^-$]). For household purposes, the most reliable procedure for rendering a polluted water supply safe for drinking is boiling.

POSSIBLE DANGERS OF X-RAY TO FETUS

To the Editor:—Recently a chiropractor roentgenographed a patient of mine for diagnosis of twin fetuses. The patient aborted twins six months and three days later. I could elicit absolutely no other history which could account for it. What is your opinion?

A. P. THOMPSON, M.D., Bell, Calif.

ANSWER.—Since it is not possible to say how much the x-ray dosage was, an opinion cannot be hazarded as to the x-ray being causative of the abortion. The scientific roentgenographing of pregnant women for diagnosis does not cause abortion. Overdosage may.

STENOSIS FOLLOWING CAUTERIZATION OF CERVIX

To the Editor:—Are there any bad after-effects following cauterization of the cervix with an electric cautery for endocervicitis as regards future pregnancies—that is, whether stenosis is apt to result because of scar tissue formation, resulting in sterility? Is it advisable to use sounds to dilate the cervical canal following such an operation? Is there any trouble to be anticipated if such a patient becomes pregnant, as regards dilatation of the cervix during labor if there is present scar tissue as a result of cauterization? Please omit name.

M.D., Wisconsin.

ANSWER.—Extensive or excessive electric cautery treatment of the cervix sometimes results in complete stenosis of the cervical canal. It is advisable to test the patency of the cervix at irregular intervals following cauterization.

In the event of pregnancy after cauterization there is little danger of stricture sufficient to interfere with labor.

IRRITABLE BLADDER AND RESIDUAL URINE

To the Editor:—A married woman of 30 has had distressing frequency of urination for six months. She has a mild uterine retrodisplacement with a small amount of residual urine. She has never been pregnant. Urinalysis shows from 20 to 30 leukocytes per lowpower field and many bacteria, mostly bacilli. She has not had signs or symptoms of pyelitis or renal tuberculosis. Treatment with methenamine (with sodium acid phosphate) proved ineffective. Irrigation of the bladder with from 3 to 5 per cent mild silver protein was useless. Irrigation with silver nitrate, from 1:8,000 to 1:5,000, gives good results for about two weeks and then the frequency returns. Is there anything else that can be done for her besides operation to correct the uterine retrodisplacement, thus relieving the residual bladder urine? Please omit name.

M.D., Racine, Wis.

ANSWER.—Retrodisplacements are rarely the cause of residual urine. Careful examination may reveal that the patient has a cystocele or a urethrocele; these lesions are sometimes evident only when the patient stands and strains.

Women who suffer from the persistent presence of residual urine must seek surgical relief or have bladder lavage often enough to control inflammation due to infected stagnant urine.

Catheterization, followed by instillation of a few cubic centimeters of 1 per cent silver nitrate during removal of the catheter, is helpful in most cases of irritable bladder.

CONTRAINDICATIONS TO VACCINATION AGAINST SMALLPOX

To the Editor:—What are the contraindications to vaccination against smallpox? That is, when would a child be considered an unfit subject for vaccination? Please omit name.

M.D., New Hampshire.

ANSWER.—In the presence of a serious epidemic of smallpox, practically no unvaccinated child would be considered an unfit subject for vaccination. Under average normal conditions, children as a rule are not vaccinated until after they are 6 months of age or older and in fairly good general health. Under normal conditions, vaccination would seem to be uncalled for so long as the child was suffering from acute infection of any sort, serious skin disease, or any other disease or condition seriously affecting physical strength.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMOLOGY: St. Louis, Washington University Dispensary, Oct. 15. Sec., Dr. William H. Wilder, 122 So. Michigan Ave., Chicago.

AMERICAN BOARD FOR OTOLARYNGOLOGY: New York, Oct. 11 and St. Louis, Oct. 15. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

ARKANSAS—Eclectic: Little Rock, Nov. 13-14. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith, Ark.

ARKANSAS—Homeo: Place not decided, Nov. 13. Sec., Dr. A. A. Pringle, Eureka Springs, Ark.

ARKANSAS—Regular: Little Rock, Nov. 13-14. Sec., Dr. J. W. Walker, Fayetteville, Ark.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 908 Forum Bldg., Sacramento, Calif.

COLORADO: Denver, Oct. 2, 1928. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver, Colo.

CONNECTICUT—Healing Arts (Basic Science): New Haven, Oct. 13. Address—State Board of Healing Arts, Box 1895, Yale Station, New Haven, Conn.

CONNECTICUT—Homeopathic: New Haven, Nov. 13. Sec. Dr. E. C. M. Hall, 82 Grand Ave., New Haven, Conn.

CONNECTICUT—Regular: Hartford, Nov. 13-14. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford, Conn.

DISTRICT OF COLUMBIA: Washington, Oct. 9. Sec., Dr. E. P. Copeland, Suite 110-1801 Eye St., N. W., Washington, D. C.

FLORIDA: Marianna, Nov. 12-13. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa, Fla.

GEORGIA: Atlanta, Oct. 9-10. Sec., Dr. B. T. Wise, Americus, Ga.

HAWAII: Honolulu, Oct. 8. Sec., Dr. James A. Morgan, Room 48, Young Bldg., Honolulu, Hawaii.

IDAHO: Boise, Oct. 2, 1928. Commissioner of Law Enforcement, Hon. F. E. Lukens, Boise, Idaho.

ILLINOIS: Chicago, Oct. 2-4, 1928. Supt. of Registration, Mr. V. C. Michels, Dept. of Regis. and Edu., Springfield, Ill.

KANSAS: Topeka, Oct. 9. Sec., Dr. Albert S. Ross, Sabetha, Kan.

LOUISIANA—Homeopathic: New Orleans, Nov. 6. Sec., Dr. F. H. Hardenstein, 1714 Pere Marquette Bldg., New Orleans, La.

MAINE: Portland, Nov. 13-14. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland, Me.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Dr. Frank M. Vaughan, 144 State House, Boston, Mass.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. Guy L. Connor, 707-708 Stroh Bldg., Detroit, Mich.

MINNESOTA — Basic Science: Minneapolis, Oct. 2, 1928. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., U. of Minn., Minneapolis, Minn.

MINNESOTA—REGULAR: Minneapolis, Oct. 16-18. Sec., Dr. A. E. Comstock, 524 Lowry Medical Arts Bldg., St. Paul, Minn.

MISSOURI: St. Louis, Oct. 23-25. Address — Dr. Ross Hopkins, Licensure, Jefferson City, Mo.

MONTANA: Helena, Oct. 2-4, 1928. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NEVADA: Carson City, Nov. 5-7. Sec., Dr. Edw. E. Hamer, Carson City, Nevada.

NEW JERSEY: Trenton, Oct. 16. Sec., Dr. Charles B. Kelley, 30 West State St., Trenton, N. J.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. W. T. Joyner, Roswell, New Mex.

RHODE ISLAND: Providence, Oct. 4-5. Sec., Dr. B. U. Richards, State House, Providence, R. I.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia, S. C.

District of Columbia July Examination

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors, reports the oral and written examination held at Washington, July 10-12, 1928. The examination covered 16 subjects and included 80 questions. An average of 75 per cent was required to pass. There were 47 candidates examined, and all passed. One physician was licensed by reciprocity. The following colleges were represented:

College	PASSED Year Grad.	Per Cent
Georgetown University School of Medicine	(1927) 82.4, 83, (1928) 76.4, 80.9, 83.5, 83.9, 84.6, 85, 86.8, 87, 87.3, 87.9, 89	83.6,
George Washington University Medical School	(1928) 80.4, 81, 85.3, 85.6, 85.9, 87, 87.8, 88, 88.8, 88.9, 88.9, 89, 89.5, 90.6, 91, 91.6, 91.8	85.1,
Howard University School of Medicine	(1928) 75.6, 78.1, 79.9, 80.2, 80.4, 80.6, 80.9, 81.1, 82.4, 83, 85.9	
Johns Hopkins University School of Medicine	(1927)	85.5
University of Michigan Medical School	(1922)	87.6
Jefferson Medical School of Philadelphia	(1926)	86.1
University of Tennessee College of Medicine	(1928)	84.3

College	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
Leonard Medical School	(1907)	N. Carolina

Book Notices

THE EXAMINATION OF PATIENTS. By Nellis B. Foster, M.D., Associate Physician to the New York Hospital. Second edition. Cloth. Price, $4.50 net. Pp. 392, with 83 illustrations. Philadelpia: W. B. Saunders Company, 1928.

This volume in its second edition is complete and concise and beautifully illustrated. It contains only the rich meat of physical diagnosis and differential diagnosis and there is little wasted space in nonessentials. The case histories, which are few, are well presented, are illustrative and are not needlessly lengthened. The author has succeeded admirably in covering a large and difficult subject. References to laboratory methods and recent aids to diagnosis are numerous. Illustrations, diagrams, roentgenograms, colored plates of eyegrounds and skin reactions, and electrocardiographic tracings are numerous and well selected.

RECENT ADVANCES IN MEDICINE: CLINICAL, LABORATORY, THERAPEUTIC. By G. E. Beaumont, M.A., D.M., F.R.C.P., Physician, with Charge of Outpatients, Middlesex Hospital, and E. C. Dodds, M.D., Ph.D., B.Sc., Professor of Biochemistry in the University of London. Fourth edition. Cloth. Price, $3.50. Pp. 426, with 48 illustrations. Philadelphia: P. Blakiston's Son & Company, 1928.

This is the fourth edition of an important collection of tests and methods used in modern medical practice. The new volume contains much material on the use of tests of spinal fluid and on injection methods concerned in cerebrospinal therapy. New material on the parathyroid glands, on quinidine and on iodized oil serves also to bring the book quite down to date. Those interested in technical methods of recent years will find this a most valuable book of references.

MODERN MEDICINE. Its Theory and Practice in Original Contributions by American and Foreign Authors. Volume VI: Diseases of the Nervous System—Diseases and Abnormalities of the Mind. Edited by Sir William Osler, M.D., F.R.S. Re-edited by Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia, and Elmer H. Funk, Clinical Professor of Medicine, Jefferson Medical College, Philadelphia. Third edition. Cloth. Price, $9. Pp. 964, with illustrations. Philadelphia: Lea & Febiger, 1928.

This volume of the well established Osler system covers the nervous and mental diseases ordinarily held to be in the realm of medicine, and the nervous manifestations of syphilis, endocrine disorders, and tumors of the tissue of the nervous system. It includes twenty-five chapters contributed by twenty of the leading clinicians, surgeons and neurologists of Great Britain, Canada and the United States. Clear, concise and thorough, the style is that of the college textbook that is written for instruction only. So far as they are known, the etiologic factors are given, diagnosis is clarified, and treatment is adequately considered. The subject matter is practical; theory is not stressed. Part I is much more voluminous than part II. It contains treatises on the rare as well as on the common disorders, but the chapters are not overburdened with material and single phases of subjects are not overwritten. Part II amounts to little more than an outline of the psychoses and neuroses. It states that "heredity exerts a tremendous influence on the development of mental disease," and that "prognosis should be based on a careful estimate of the assets and liabilities of the patient as it is neither better nor worse than in the usual run of practice." A glossary of the terms used in psychiatric symptomatology will be helpful to the student as well as to the casual reader.

DIE DIATHERMIE. Von Dr. Josef Kowarschik, Primararzt und Vorstand des Institutes für physikalische Therapie im Krankenhaus der Stadt Wien in Lainz. Sixth edition. Cloth. Price, 16 marks. Pp. 246, with 125 illustrations. Berlin: Julius Springer, 1928.

This book gives an excellent description of the physics and the technic of diathermy. The instruments described, however, are of foreign make and probably would be of little interest to the American physician. A large number of conditions are given in which diathermy has been used. A desirable feature is the digest of the research that has been done, given under each disease listed, together with the author's personal experiences. The work also contains an excellent bibliography. These features make the book valuable for the experienced worker in physical therapy. Diathermy is recommended as dependable for

the permanent reduction of high blood pressure; such advice is questionable for the physician starting work in this field and desiring conservative information.

GOULD'S MEDICAL DICTIONARY CONTAINING ALL THE WORDS AND PHRASES GENERALLY USED IN MEDICINE AND THE ALLIED SCIENCES, WITH THEIR PROPER PRONUNCIATION, DERIVATION, AND DEFINITION BASED ON RECENT MEDICAL LITERATURE. By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine. Second edition. Leather. Price, $7.—Thumb Index, $7.50. Pp. 1522, with illustrations. Philadelphia: P. Blakiston's Son & Company, 1928.

The new revised and enlarged edition of Gould's Medical Dictionary is a fine accomplishment. Of special interest is a new table of micro-organisms, compiled by Dr. D. H. Bergey and providing classifications according to the old and the new methods. Several other extensive tables as well as many small ones add to the usefulness of the text. Indeed, there are in all 170 such compilations. The dictionary contains 83,000 words, pronounced and defined in most instances without etymology. Although Gould himself was inclined to the elimination of the *al* ending on medical adjectives, the dictionary has not followed modern usage in this connection, giving the al ending first, presumably as the method of choice. On the other hand, diphthongs are given second to the simplified usage. The editing has been thorough, although the dictionary still contains references to many discarded and forgotten proprietaries by their trade names. It also contains numerous botanic details which are of little use to the medical reader. The publication of portraits of historical interest adds to the value of the text. On the other hand, some of the ancient line drawings used for illustration mean little to the usefulness of the book. The volume may be recommended as an exceedingly valuable work of reference to the medical reader.

LOW BLOOD PRESSURE: ITS CAUSES AND SIGNIFICANCE. By J. F. Halls Dally, M.A., M.D., B.Chir., Physician to Mount Vernon Hospital. Cloth. Price, $5. Pp. 257, with 15 illustrations. New York: William Wood & Company, 1928.

There is as little definite knowledge regarding low blood pressures as there is regarding high pressures, if not less. In this volume an attempt is made to rationalize the important and interesting subject of low arterial pressure and to discuss it from various aspects. The author has thoroughly covered the literature on the subject, although he has missed the work of A. I. Kendall, Ph.D., who has isolated a histamine-like substance from the stools of patients with "gas bacillus colitis," all of whom have relatively or absolutely low pressures. This book on hypopiesis should do much in bringing to the attention of the profession the inadequacy of our knowledge of this subject and the need of further study and investigation of this problem.

A TEXT-BOOK OF ORTHOPEDIC SURGERY FOR NURSES. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Orthopedic Surgery, Northwestern University Medical School. Cloth. Price, $3.25 net. Pp. 353, with 161 illustrations. Philadelphia: W. B. Saunders Company, 1928.

This is a concise and practical presentation of the subject, written especially for nurses but equally valuable for the use of interns. The first chapter contains a sufficiently comprehensive terminology. The second details the equipment and technic of the "plaster room"; splints, their uses and their application are well illustrated. The chapter on operative technic is excellent. The common and many of the uncommon orthopedic conditions are described in a terse and clear manner. The final chapter, on heliotherapy, is well worth reading. The book is highly satisfactory.

LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By Meyer Bodansky, Associate Professor of Biological Chemistry, and Marion S. Fay, Adjunct Professor of Biological Chemistry, School of Medicine, University of Texas. Cloth. Price, $2 net. Pp. 234, with 9 illustrations. New York: John Wiley & Sons, Inc., 1928.

The first chapter of this volume is devoted to introductory statements intended for students who lack training in the principles and methods of quantitative analysis. The treatment is extremely elementary and certainly not sufficiently detailed to be of much assistance to the unprepared student. On the other hand, for the prepared student this chapter is superfluous. A chapter on colloids follows and is devoted almost entirely to experiments on inorganic colloidal states. The next three chapters treat carbohydrates, lipins and proteins in an elementary manner. No attempt has been made to present this important qualitative work in a comparative, quantitative manner, and the limitations in the applications of the tests are not discussed. For the quantitative estimation of reducing sugars, one of the oldest and least accurate direct titration methods is emphasized. The chemistry of digestion and the pathologic examination of urine are treated in the same general manner. The chapters on the quantitative analysis of blood and urine consist mainly of a compilation of some of the usual methods reprinted practically as originally published in the journals. In their preface the authors acknowledge this fact and state it as their belief that "there are distinct advantages in training students to follow analytical procedures as they appear in the literature and not in predigested form." It is improbable, however, that the type of student appealed to in the first chapters will be able to eliminate the numerous errors so easily introduced in these quantitative methods.

THE PRESCRIBING OF SPECTACLES. By Archibald Stanley Percival, M.A., M.B., B.C. Third edition. Cloth. Price, $5 net. Pp. 239, with 29 illustrations. New York: William Wood & Company, 1928.

This edition, appearing eighteen years after the first, has been rewritten to include the more modern investigations of Gullstrand, Tscherning, Duane and others. It is divided into four main sections and an appendix; accommodation is dealt with in the first, static refraction in the second, and abnormalties of the ocular muscles in the third, while the fourth is devoted to optical principles and mathematical formulas pertaining to the eye and its refraction. In the appendix are condensed regulations for various branches of English service. This is not a textbook on refraction for beginners. It is an admixture of accurate knowledge of the principles of optics, extensive clinical experience, and sound common sense, served in palatable form without too much garnishment of theoretical spice. The practicing ophthalmologist will do well to read this book, for not only will he gain many new points, but some of his more or less dormant cortical cells will disgorge their half-forgotten facts and start to function again.

MICHIGAN HANDBOOK OF HOSPITAL LAW. By Dorothy Ketcham. Cloth. Price, $2. Pp. 237. Ann Arbor: Michigan Hospital Association, 1928.

This is a digest of laws and court decisions (with citations) on numerous cases involving hospitals, arranged alphabetically and covering such subjects as abortion, autopsy, contracts, drug and liquor regulations, and incorporation, making it worth the price to any hospital administrator. The appendix contains, in addition to other things, a directory of hospitals and sanatoriums in Michigan; some national and state agencies concerned with hospital problems, and the Essentials in a Hospital Approved for Interns by the Council on Medical Education and Hospitals of the American Medical Association. Unfortunately the "Essentials" quoted are the March, 1925, edition, thus failing to give some important requirements that have since been published. The book relates primarily to Michigan, but much of it is applicable to hospitals anywhere.

LES ORDONNANCES DU MÉDECIN PRATICIEN. Par MM. Abbatucci, Bellot, Bozo, Brocq, etc., etc. Paper. Price, 45 francs. Pp. 515, with 2 illustrations. Paris: Masson & Cie, 1928.

This is a collection of outlines in French on treatment of a considerable number of common ailments by various French clinicians; and as is often the case in publications of multiple authorship, the quality of the various contributions ranges from excellent to mediocre. On the whole, one wishing to become acquainted with current medical practice in France would find here a fairly faithful picture.

ACTIONS AND USES OF THE SALICYLATES AND CINCHOPHEN IN MEDICINE. By P. J. Hanzlik, M.D., Professor of Pharmacology, Stanford University School of Medicine. Medicine Monographs, Volume IX. Cloth. Price, $3.50. Pp. 200, with 12 illustrations. Baltimore: Williams & Wilkins Company, 1927.

This is a rather exhaustive monograph on salicylates and cinchophen by a pharmacologist, who conducted a meritorious clinical investigation on the use of these agents in rheumatic fever. More such observations and publications on important medicinal agents are desirable.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

COMING OF AGE IN SAMOA. A Psychological Study of Primitive Youth for Western Civilization. By Margaret Mead, Assistant Curator of Ethnology, American Museum of Natural History. Foreword by Franz Boas, Professor of Anthropology, Columbia University. Cloth. Price, $3. Pp. 297, with illustrations. New York: William Morrow & Company, 1928.

The social phenomena of Samoan life—and they do some things better than we do them.

THE DETERMINATION OF HYDROGEN IONS. An Elementary Treatise on Electrode, Indicator and Supplementary Methods with an Indexed Bibliography on Applications. By W. Mansfield Clark, M.A., Ph.D., DeLamar Professor of Physiological Chemistry, Johns Hopkins University. Third edition. Cloth. Price, $6.50. Pp. 717, with 100 illustrations. Baltimore: Williams & Wilkins Company, 1928.

A new edition of the best available guide to this subject.

PRACTICAL SEROLOGY. By Luigi Viganò, Professor in the Royal University of Milan. Translated by E. Mary Heffer, Scholar of Girton College, Cambridge. Edited by C. G. L. Wolf, Addenbrooke's Hospital, Cambridge. Cloth. Price, 12s. 6d. net. Pp. 221, with illustrations. Cambridge: W. Heffer & Sons, Ltd., 1928.

A guide to the technic of study of the blood.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus, und P. Uhlenhuth. Lieferung 21. Band I. Die congenitale Übertragung der Infektionskrankheiten. Von Prof. Dr. H. Braun, und Dr. K. Hofmeier. Specifität der Infektionserreger. Von Prof. Dr. W. Kolle, und Dr. R. Prigge. Die Grundlagen der Lehre von der erworbenen aktiven (allgemeinen und lokalen) und passiven Immunität. Natürliche Immunität (Resistenz). Von Prof. Dr. M. Hahn. Third edition. Paper. Price, 16 marks. Pp. 523-758, with 3 illustrations. Jena: Gustav Fischer, 1928.

ANSWERS TO QUESTIONS PRESCRIBED BY NURSES' STATE BOARDS. By Robert B. Ludy, M.D. Edited by Edgar S. Everhart, M.D., Assistant Chief, Bureau of Communicable Diseases Pennsylvania State Health Department, and J. Clarence Funk, M.A., Sc.D., Chief, Bureau Public Health Education Pennsylvania State Health Department. Price, $3. Pp. 498. Philadelphia: David McKay Company, 1928.

A HANDBOOK ON VENEREAL DISEASES FOR NURSES AND OTHERS ENGAGED IN THE ROUTINE TREATMENT OF THESE DISEASES. By Turner Warwick, F.R.C.S., Assistant Surgeon and Medical Officer in Charge of Male Gonorrhœa Department, Middlesex Hospital. Cloth. Price, 6/- net. Pp. 221, with illustrations. London: Faber & Gwyer, Ltd., 1928.

DIE NÄHRSCHÄDEN DES KINDES, IHRE ENTSTEHUNG, VERHÜTUNG UND HEILUNG. Ein Leitfaden für die Praxis. Von Hans Aron, a. o. Professor für Kinderheilkunde an der Schlesischen Friedrich-Wilhelms-Universität in Breslau. Paper. Price, 6 marks. Pp. 152, with 37 illustrations. Berlin: Urban & Schwarzenberg, 1928.

REPORT OF AN INQUIRY INTO THE AFTER-HISTORIES OF PERSONS ATTACKED BY ENCEPHALITIS LETHARGICA. By Allan C. Parsons, M.R.C.S. Ministry of Health, Reports on Public Health and Medical Subjects, No. 49. Paper. Price, $1.25. Pp. 204. London: His Majesty's Stationery Office, 1928.

AMERICAN CHEMISTRY. A Record of Achievement the Basis for Future Progress. By Harrison Hale, Ph.D., Head of Department of Chemistry, University of Arkansas. Second edition. Cloth. Price, $2.50. Pp. 255, with illustrations. New York: D. Van Nostrand Company, Inc., 1928.

RECREATIONAL THERAPY IN CONVALESCENCE AND ALLIED SUBNORMAL HEALTH CONDITIONS. By Frederic Brush, M.D., Medical Director, The Burke Foundation, White Plains, N. Y. Paper. Pp. 33, with illustrations. White Plains, N. Y.: The Burke Foundation, 1928.

RADIOLOGIE DU COEUR ET DES VAISSEAUX DE LA BASE. Par H. Vaquez, professeur à la faculté de Paris, et E. Bordet, chef de laboratoire à la Faculté de médecine de Paris. Fourth edition. Paper. Pp. 499, with 457 illustrations. Paris: J. B. Baillière & Fils, 1928.

INCOMPATIBILITY IN PRESCRIPTIONS. By Santosh Kumar Mukherji, M.B., Editor, Indian Medical Record. Paper. Price, Re. 1-8. Pp. 135. Calcutta: Rai Saheb B. N. Mukherji & Son, 1928.

ATLAS DER BLUTKRANKHEITEN. Von Dr. Karl Schleip, und Dr. Albert Alder, Privatdozent für innere Medizin an der Universität Zurich. Second edition. Cloth. Price, 62 marks. Pp. 175, with 108 illustrations. Berlin: Urban & Schwarzenberg, 1928.

THEORETISCHE BIOLOGIE. Von J. von Uexküll. Second edition. Paper. Price, 15 marks. Pp. 253. Berlin: Julius Springer, 1928.

Medicolegal

Burden of Proof in Malpractice Case

(Cayton v. English (D. C.), 23 Fed. (2d) 745)

In this action for malpractice, the plaintiff testified that she employed the defendant, an osteopathic physician, to treat her for relief from headache and high blood pressure, and that the defendant manipulated her legs in such a manner as to cause a diagonal rupture of the fascia lata. The plaintiff called five physicians as witnesses. The substance of their testimony was that injuries of this kind were exceedingly rare; that there is very little medical data as to what causes breakage of the fascia lata; that they were not familiar with osteopathic treatment, and knew nothing about manipulation of the leg in such cases. The plaintiff called as a witness an osteopathic physician also, who testified that he could not see how an injury could ever follow an adduction or treatment; "that it would be impossible for an injury to result to the muscles, the fibers of the body in any part, the joints, or particularly the fascia lata, following a treatment of a patient in the regular course of osteopathic treatment as practiced by him and generally recognized by the school of osteopathy"; that the fascia lata cannot be injured no matter how much the leg be stretched without a complete dislocation of the head of the femur. The trial court returned a verdict for the defendant. The plaintiff appealed. The plaintiff contended that the court erred in charging the jury that the burden of proving negligence was on her, and that there was no presumption of negligence arising from the mere occurrence of an injury, but that such negligence must be affirmatively proved. The District of Columbia court of appeals held: "It was the duty of the defendant in undertaking to treat the plaintiff to exercise the ordinary care and skill of his profession, giving due consideration to modern advancement and learning, and there was an implied agreement that no injurious consequences would result from want of proper skill, care or diligence on his part. But one who seeks to recover against a physician alleging lack of skill or negligence causing injury has the burden of proving his averments"; that unfortunate results do not establish negligent treatment, and that a physician or surgeon charged with malpractice is entitled to have his treatment tested by the rules and principles of the school of medicine to which he belongs.

The plaintiff contended also that the trial court erred in admitting in evidence a report made by the defendant to a naturopath who referred the case, stating in brief form the results of the examination of plaintiff. The appellate court held the report admissible as a part of the res gestae. The judgment of the trial court was affirmed.

Validity of Charges Against Illegal Practitioner

(State v. Hale (Utah), 263 P. 86)

The defendant was convicted of the crime of treating human ailments without a license on an information charging that he "in the state of Utah, not being licensed to treat human ailments, did then and there treat human ailments without the use of drugs and medicine and without the use of operative surgery, contrary to statute." He appealed to the supreme court of Utah, contending that the language used in the information, and in the complaint on which the information was based, was so general that he was not advised of the particular acts constituting the charge made against him. The supreme court of Utah, in upholding this contention and reversing the judgment of the lower court said: "It will be seen that nowhere in the information is it alleged who was treated for human ailments by the defendant. Is the defendant charged with treating his own ailments or those of another? So far as the information discloses, it may be either or both. It seems clear that the provisions of Laws Utah 1921, C. 91, S. 15, are directed against the treatment of human ailments of another, and that so long as one confines his treatment to himself he is not guilty of any of the offenses defined in chapter 91. Even under the state's contention the information is silent as to one fact necessary to constitute the offense attempted to be charged, namely, that the treatment was that of an ailment of some one

other than the defendant." The sufficiency of the language used in an information to charge a public offense is not necessarily determined by whether such language is or is not the language used in the statute defining the offense sought to be charged.

Since the complaint was in substantially the same language as the information, the court held that it, too, was fatally defective and that a new information could not properly be based on it. One purpose of a complaint is to advise the defendant of the charge made against him, and this purpose was not met by the complaint in this case.

Deformity of Ancestor as Evidence in Bastardy Proceeding

(Chandler v. State (Ala.), 115 So. 385)

In a bastardy proceeding, Chandler was found guilty of being the father of an illegitimate child and appealed. At the trial, the state called Dr. W. as its witness. He described a peculiarity or deformity appearing on the person of Chandler's grandfather and stated that, while he did not know of any medical authorities that taught that such deformities were transmissible by heredity, he did not know of any that taught that they were not. Chandler objected to the admission of this testimony, but the objection was overruled. In reversing the judgment of the lower court, the Court of Appeals of Alabama held that, while a tendency of the evidence was that the child bore a similar mark, the testimony of Dr. W. tended to prove nothing, was altogether incompetent or irrelevant, and its admission clearly prejudicial.

Damages for Traumatic Blood Tumor in Rhomboidal Muscles

(Boeckling Co. v. Slattery (Ohio), 160 N. E. 99)

This was an action to recover damages for personal injuries sustained by the defendant in error. The jury returned a verdict for $5,000, and the plaintiff in error appealed, claiming that the damages allowed were excessive. The testimony of two attending physicians showed that the blow caused a bruising of the tissues and a hemorrhage, resulting in a hematoma, or blood tumor, in the rhomboidal muscles; that there resulted therefrom a thickening or greater prominence of the tissues in those parts; that these muscles have to do with the tension on and placing of the shoulder blade or scapula, and are attached to it; that when there is a lifting of the arm or a reaching motion or a downward, backward movement of the arm, like a sweeping or saber motion, the defendant in error suffers pain and the pain excites paroxysms of coughing; that the injury will result in a chronic condition, attended by pain and soreness, will be naturally aggravated by colds and coughs, and that the injury is of a permanent nature. The defendant in error testified that she was at the time of her injury earning approximately $145 a month. After her injury she lost considerable time as a result of her indisposition arising therefrom, and finally, about a year thereafter, left her employment and has since been keeping house.

The court of appeals of Ohio, in holding that the damages allowed were not excessive, said: "We are unable to say that the damages are so excessive as to warrant the conclusion that the amount awarded by the jury is clearly and manifestly against the weight of the evidence in this respect."

Speculative and Indefinite Opinion of Expert

(Vokes v. Steers, Inc. (N. Y.), 226 N. Y. S. 527)

This case was a proceeding under the workmen's compensation act of New York. An award was allowed to the plaintiff, and the defendant appealed to the supreme court of that state. That court, in reversing the award, said: "The finding that the deceased suffered a loss of use of 50 per cent of his leg is not supported by legal evidence. The doctor who so testified repeatedly stated that he could not speak with reasonable certainty. His opinion was only given after he had been told in effect by the referee that he need not give a definite opinion. It is clear that the opinion thus expressed was speculative and indefinite and lacked the certainty requisite to give it any probative force."

Validity of Contract for Medical Services

(Ingalls v. Perkins (N. M.), 263 Pac. 761)

The plaintiff, a physician, contracted with the defendant to give medical attention to patients in a sanatorium conducted by her, in which, under a contract with the United States Public Health Service, she cared for certain disabled veterans. The plaintiff had earned $140.64 under this contract, when he was appointed by the Public Health Service to examine ex-service men sent to him for that purpose and to treat them in emergency cases prior to their admittance to hospitals. Under that appointment he had authority to recommend the placement in contract hospitals of ex-service men examined by him and he could recommend their discharge. The plaintiff continued to work for the defendant until he was entitled to $844.50, when the defendant discharged him. He sued for the amount named, but the trial court gave judgment for only $140.64, the amount earned before he entered the service of the Public Health Service. The court held that, although the contract was legal when made, it became illegal on his appointment to the Public Health Service, because in violation of certain federal penal statutes and because against public policy. The plaintiff thereupon appealed to the supreme court of New Mexico. The supreme court pointed out that the statutes that were assumed to have been violated by the plaintiff's contract were penal statutes and were to be strictly construed. So construed, the court held, they did not apply to this case. The assignment of patients was not within the province of the plaintiff; he could recommend only that they be placed in contract hospitals, and the private advantage likely to accrue from such recommendations were so remote and indirect as to be hardly recognizable. He might recommend the discharge of patients and serve his own petty ends by refusing to recommend the discharge of one who did not need further treatment. But, the court says: "The risk of being so mulcted is one which all who employ physicians must run in the ordinary course of business. To the honor of the profession it may be said that it is a risk which need give the public little concern." The court concluded that it was not so clear that the plaintiff had a public duty so incompatible with his private interests as to require the court to set aside a contract which every principle of justice and sound policy required it to enforce. The judgment of the trial court was reversed and it was directed to enter a judgment for the plaintiff for the full amount of his claim.

Chiropractic Treatment of Appendicitis

(Miller v. Collins (N. J.), 140 Atl. 402)

In this action for malpractice, the testimony indicated that the plaintiff was seized with severe abdominal pains. He consulted a physician, who examined him and told him that he had appendicitis and that there should be an operation. The plaintiff said he wished to see his wife before consenting to the operation, and went home. The next morning a friend advised him to consult the defendant, which he did at the defendant's office. The defendant was introduced as "Dr. Collins." The plaintiff did not know that he was a chiropractor, and if he had known it he would not have gone to him. The defendant examined him and said that it was "not an appendix." He caused the plaintiff to strip to the waist and lie on a couch face down, gave him a spinal massage, and looked in his eyes with an optical instrument. The plaintiff was told to return the next day and did so. He reported a continuance of violent pains through the night, and was told that "it would all work out." This time he was placed on his back and massaged in the sensitive region. He was furnished a box of whole food salt for use as a condiment, or "Mediterranean Sea Salt" for external use, bearing the name of "F. W. Collins, M. D. Manager," and a box of powdered charcoal. This treatment continued for two or three days, the pain and distress increasing. Enemas were prescribed. No other examination was made. Neither temperature nor pulse was taken, nor was there any palpation of the abdomen. Finally the plaintiff went back to the first physician and an operation disclosed a ruptured appendix. This, the physician testified, made it more serious, for the plaintiff, who narrowly escaped death, was in the hospital a month instead of ten days, and had to have several pus

drains to carry off the pus that formed, resulting in adhesions which a "clean" operation would have avoided. The trial court dismissed the action, remarking that there seemed to be no evidence to show that the injuries could be traced to the defendant's negligence.

In reversing the decision of the trial court, the New Jersey court of errors and appeals said: "The complaint counted, in effect, on two causes of action: Fraud, in defendant holding himself out as a doctor of medicine; and negligence, in failing to use ordinary care and skill in treatment. There was some evidence for the jury as to the first, and ample evidence as to the second." As to the defense that the defendant's treatments were not the proximate cause of the injuries, the court held that the physician's testimony indicated that the defendant was responsible for the aggravated condition at the time of the operation. The court held that it was a proper case for the jury as to fraud, the want of ordinary care and skill, and resultant aggravation of conditions, and remanded the case to the trial court for trial.

Belief in Infidelity of Wife Not an Insane Delusion

(In re McDowell's Will (N. J.), 140 Atl. 281)

The testator's estate amounted to $25,000, plus the right to dispose of some $200,000 by will, his share of his father's estate. The testator's sister would take his share of his father's estate if the testator failed to dispose of it by will. The testator bequeathed to his widow $5,000 and left the remainder of his estate to the Art Students' League of New York. The widow filed a caveat, but withdrew it after a settlement with the league. The testator's sister, the conditional beneficiary under her father's will, thereupon contested the probate of the will. The orphans' court found the testator to be a monomaniac, obsessed with a delusion that his wife was unfaithful. It held, however, that only the wife could resist probate because of the delusion of her husband, the testator, and that the sister had no standing to object, and it admitted the will to probate. The sister appealed.

The evidence adduced, the court said, was proof of a jealous, suspicious mind, but was far short of proof of a fixed belief by the testator that his wife was unfaithful. He never charged her with sinning, to her or to any one else, and a complete refutation of the imputation, it would seem, was their constant communion and always sharing the connubial bed. The natural reaction to a fixed belief of adultery is separation, but he clung. A well recognized characteristic of a fixed delusion is spontaneous outbursts by the victim whenever the subject of the delusion is touched on or the opportunity is invited. To give vent to the delusion is irresistible. The testator was not given to expressing his feelings, and he did not, except once to his friend Cook, and another time to his lawyer.

If we assume that the testator believed in his wife's guilt, as the contestant contended, and if that belief was in response to what he observed or what was told concerning his wife, however much such observations and information may have been misconceived or misconstrued, the false belief would not be proof of a delusion justifying the conclusion that his mind was diseased and that he was incompetent. If there was actual ground for the suspicion, though such suspicion was in fact not well founded and was disbelieved by others, the misapprehension of the fact will not be considered mental delusion, and a will made by a party entertaining such suspicion will be valid. To justify the rejection of a will because of delusion, the evidence must be established that a false belief is the figment of a deranged mind and not the result of impression produced by extraneous circumstances, and the burden is on the caveator to prove the nonexistence of extrinsic evidence on which the belief rested.

It was argued as evidence of a delusion that the will provided that it would be unaffected by after-born children. The testator was diabetic and probably sterile, if not impotent. This provision, perhaps, reflected the testator's experience with his first wife, who had a child seven or eight months after they separated, the parentage of which was denied. To a possible occurrence of a similar situation he closed the door. If this be a correct surmise, it was not a reflection born of delusion but of a fact.

A will may be contrary to the principles of justice and humanity, its provisions may be shockingly unnatural and extremely unjust, but if it appears to have been made by a person of sufficient age to be competent to make a will, and also to be the free and unconstrained product of a sound mind, the courts are bound to uphold it. The court found that the contestant had not established that the testator entertained an insane delusion of his wife's infidelity and that the will was the result of such a delusion and affirmed the decree of the court below admitting the will to probate.

Chiropractic as Practice of Medicine

(State Board of Medical Examiners v. Walker (N. J.), 140 Atl. 420)

The defendant was convicted of practicing medicine and surgery without a license. At the trial, the state board of medical examiners produced witnesses who testified that they had at various times visited the defendant's offices, where they saw displayed signs "Dr. Alson J. Walker" and a statement of office hours. The office was divided into a waiting room and a treating room. Witnesses told the accused of their ailments, and he diagnosed their troubles and gave to each of them chiropractic treatments, manipulating the spinal column with his hands. This testimony was not disputed by the defendant. There was no evidence that he had any license to practice as a chiropractor. The defendant, on his conviction, obtained a review of the case by the supreme court of New Jersey. He contended that the acts committed by him did not violate the medical practice act and claimed the right to a jury trial. The court held that the testimony justified the conviction and under the statutes of New Jersey the defendant was not entitled to a trial by jury. The judgment of the trial court was affirmed.

Traumatic Paralysis Agitans; Damages

(Krauss et al. v. Kaminski (N. J.), 140 Atl. 277)

In this case the plaintiff, aged 53 years, was injured as a result of defendant's negligence. In an action for damages in the trial court, the jury seems to have found from the evidence submitted that paralysis agitans resulted from the accident and a verdict for $15,000 was rendered. The defendant appealed to the supreme court of New Jersey, contending that the damages awarded were excessive. The supreme court, however, did not think so and referred to the fact that paralysis agitans is incurable, that it would incapacitate the plaintiff for life, that it affected his tongue and larynx, and that it produced an expressionless face.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, St. Louis, Oct. 15-19. Dr. William P. Wherry, Medical Arts Bldg., Omaha, Sec.

American Association of Railway Surgeons, Chicago, October 31-November 2. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Sec'y.

American Child Health Association, Chicago, Oct. 15-19. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.

American College of Physical Therapy, Chicago, October 8-13. Dr. R. W. Fouts, Medical Arts Building, Omaha, Secretary.

American College of Surgeons, Boston, October 8-12. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Public Health Association, Chicago, Oct. 15-19. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

American Social Hygiene Association, Chicago, Oct. 15-19. Dr. W. F. Snow, 370 Seventh Avenue, New York, General Director.

Association of American Medical Colleges, Indianapolis, October 29-31. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Baltimore, October 4-6. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Sec'y.

Interstate Postgraduate Medical Association of North America, Atlanta, Ga., Oct. 15-19. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Medical Society of the Missouri Valley, Omaha, October 30-November 1. Dr. Earl C. Sage, Medical Arts Building, Omaha, Secretary.

New York and New England Association of Railway Surgeons, New York, October 12-13. Dr. Brooks W. McCuen, 423 James Street, Syracuse, New York, Secretary.

Ohio Valley Medical Association, Evansville, Ind., November 14-15. Dr. Bruce H. Beeler, 3rd and Main Streets, Evansville, Secretary.

Pennsylvania, Medical Society of the State of, Allentown, October 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Medical Association, Asheville, N. C., November 12-15. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Burlington, October 11-12. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Danville, Oct. 16-18. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

3: 629-754 (Aug.) 1928

*Heart in Infection. H. F. Swift, New York.—p. 629.
*Surgical Treatment of Angina Pectoris. R. Leriche and R. Fontaine, Strasbourg, France.—p. 649.
*Association of Angina Pectoris and Hyperthyroidism. M. W. Lev and W. W. Hamburger, Chicago.—p. 672.
*Spontaneous Arteriovenous Aneurysm in Thorax. S. J. House and E. W. Goodpasture, Nashville, Tenn.—p. 682.
Experimental Study of Extracardial Nerves. H. L. Otto, New York. —p. 691.
Id.: H. L. Otto, New York.—p. 697.
*So-Called Supernormal Recovery Phase of Conduction in Heart Muscle. C. C. Wolferth, Philadelphia.—p. 706.
Aberrant Ventricular Complex as Aid in Prognosis. O. S. Hansen, Minneapolis.—p. 712.
*Ventricular Tachycardia Showing Bidirectional Electrocardiograms, Associated with Digitalis Therapy. W. C. Smith, Nashville, Tenn.—p. 723.
Cleaning of Electrocardiographic Strings. A. S. Hyman, New York.—p. 733.
Case of Auricular Flutter with Paroxysmal Attacks of 1:1 Response of Ventricles. A. B. Fuller, Pittsburgh.—p. 734.

Heart in Infection.—The type lesions of the heart as presented by Swift are first, toxic, as in diphtheria and early in scarlet fever; second, allergic, hyperergic or hypersensitive, as late in scarlet fever, in rheumatic fever and in syphilis; third, bacteremic and biologically immune, as in subacute bacterial endocarditis, and fourth, bacteremic, toxic and cachectic, as in acute septicopyemia.

Surgical Treatment of Angina Pectoris.—The surgical treatment of angina pectoris seems to Leriche and Fontaine to be perfectly justified on condition that only carefully diagnosed cases are submitted to it. Contrary to current opinion, they believe that it is indicated in early cases before they become too advanced or too severe, and while the organ can be considered sound. In very severe and far advanced cases, they recommend palliative treatment, such as paravertebral injections of alcohol and procaine. However, the surgical treatment of angina pectoris still remains open for discussion. The best method is still to be found. Experimental studies on animals are of little value now because they can answer questions of only secondary importance. Real advance along this particular line can come only from greater experience and for this reason we must have very carefully studied observations. As angina pectoris is not a very common disease, no surgeon can reasonably expect to acquire sufficient surgical experience to answer all of the questions arising in this connection. For this reason all surgeons who have done such operations should publish their complete observations in a precise and uniform manner, so that some day some one may balance the results and arrive at some conclusions as to what is the most satisfactory method to follow in the surgical treatment of angina pectoris.

Association of Angina Pectoris and Hyperthyroidism.—Six cases of associated angina pectoris and hyperthyroidism are reported by Lev and Hamburger. Of the five patients operated on, four have remained free of anginal pain to date; one continued to have cardiac pains and died a month later. As to the pathogenesis of angina pectoris in hyperthyroidism, the authors offer the suggestion that its occurrence is evidence of ischemia or anemia of the heart muscle due possibly to anemia, coronary sclerosis or occlusion, or to some other factor or factors interfering with an adequate coronary blood supply to the actively working thyrotoxic heart. Cases of angina pectoris associated with hyperthyroidism may properly be called thyroid angina, just as cases of tobacco angina, angina or anemia are now recognized. In this connection it is suggested that in certain cases of angina occurring in women approaching middle age, the possibility of an underlying or an associated hyperthyroidism should be considered, and conversely that in hyperthyroidism occurring in such patients the possibility of an associated angina be investigated.

Spontaneous Rupture of Aortic Aneurysm.—A case of aortic aneurysm rupturing into the superior vena cava is reported by House and Goodpasture. Seventy-four cases in the literature are discussed.

Supernormal Recovery Phase of Conduction in Heart Muscle.—A case is reported by Wolferth in which varying grades of heart block were exhibited. At times there was dissociation between auricles and ventricles, except for brief intervals in early ventricular diastole when auricular excitations were capable of being transmitted. Alternative assumptions which equally well account for phenomena observed are (1) prolongation of the rest period in the critical area of block prior to transmission or (2) transient improvement of the nutrition in the area of block due to ventricular systole and increased blood flow. The latter would seem to account for the phenomena observed in all cases thus far described quite as well as the hypothesis of a supernormal phase in conduction.

Ventricular Tachycardia Associated with Digitalis Therapy.—A case of ventricular tachycardia associated with digitalis administration, coronary disease, grave myocardial changes and heart failure is reported by Smith. Three types of rhythm changing rapidly from one to another are displayed in this case. One of these rhythms is ventricular tachycardia displaying bidirectional electrocardiograms, adding another case to the eight found in the literature.

American Journal of Surgery, New York

5: 99-190 (Aug.) 1928

Nonsurgical Renal Tuberculosis. R. Gutierrez, New York.—p. 99.
Tuberculosis of Kidney. G. Dalldorf, New York.—p. 114.
Urology in Children. P. M. Butterfield, New York.—p. 117.
Bladder Manometer for Diagnostic and Therapeutic Purposes. E. W. Hirsch, Chicago.—p. 118.
Observations on Series of Ninety-Nine Renal Neoplasms. A. Hyman, New York.—p. 120.
*Postoperative Jejunal Ulcers. N. M. Allen, Detroit.—p. 128.
Epithelioma of Clitoris and Vulva. H. W. Myer, New York.—p. 133.
Surgery of Gallbladder. C. D. Brooks, Detroit.—p. 134.
*Diagnosis and Treatment of Penetrating Abdominal Wounds. H. B. Eisberg, New York.—p. 145.
Principles and Technic of Cuneiform Osteotomy. F. M. Cadenat, Paris. —p. 153.
Some Interesting Bone Lesions. A. E. Gallant, Los Angeles.—p. 159.
Supravesical Hematuria Due to Renal Infarction. P. W. Aschner, New York.—p. 163.
Functional Restoration as Element in Facial Repair. J. E. Sheehan, New York.—p. 164.
Preoperative and Postoperative Methods with Recommendation of Ergot. W. L. Secor, Kerrville on the Guadalupe, Texas.—p. 167.
Thyroidectomy Anesthesia: Study of Different Methods of Anesthesia Used in 4,000 Goiter Operations. J. L. DeCourcy, Cincinnati.—p. 170.
Malignant Papillomatous Cystadenoma. W. L. Keller, Washington, D. C. —p. 174.
Fibrosarcoma of Jejunum. A. B. Rivers and H. R. Hartman, Rochester, Minn.—p. 177.
End-Results of Gastric Resection: Report of Nine Cases. T. H. Russell, New York.—p. 180.

Treatment of Postoperative Jejunal Ulcers.—Allen's treatment of choice in marginal ulcer, when the primary operation was gastro-enterostomy, is disconnection of the gastro-enterostomy, resection of the ulcer and repair of the jejunum and stomach, provided there is no stenosis in the pylorus, thus allowing the stomach to empty in its normal way. Allen does not think it justifiable as a primary procedure to sacrifice from one half or two thirds of the stomach for a duodenal ulcer when one cannot give the individual any assurance that the ulcer will not recur. Marginal or jejunal ulcers occur just as frequently after partial gastrectomy, and when they do recur a more formidable surgical procedure is presented than when a simple gastro-enterostomy has been performed. An individual with a gastro-enterostomy in whom a marginal ulcer develops has a much less hazardous condition than one in whom the primary operation was partial gastrectomy.

Penetrating Wounds of Abdomen.—Of the thirty-four cases of penetrating wounds of the abdomen reported on by Eisberg, sixteen were produced by a knife blade, the remainder

being the result of a bullet. Operation was performed within an average of five hours from the time of injury. In the earliest case operation was performed within one hour, and the longest interval was eighteen hours. The symptoms and signs of intra-abdominal injury, hemorrhage and shock, alone and together, were present, indicating operation in all but five cases. In these cases an exploratory operation was nevertheless performed. Fifteen patients made an uneventful recovery. Eight developed a paralytic ileus, three of whom in addition were suffering from severe shock. There were six cases of marked shock; three of these were due to severe hemorrhage, while in the fourth a hemothorax developed. In the remaining two there was no apparent reason for the degree of shock present. Postoperative pneumonia occurred in three cases, and in one of these a hemothorax and a subphrenic abscess developed. An osteomyelitis of the sacrum occurred in one instance, the result of the wound of exit. Retention of urine was present in one case.

Archives of Neurology and Psychiatry, Chicago

20: 235-442 (Aug.) 1928

Cerebellum: Its Function, Diseases and Encephalic Interrelations. C. K. Mills, Philadelphia.—p. 235.
Acute Toxic Encephalitis in Childhood: Thirteen Cases. R. R. Grinker and T. T. Stone, Chicago.—p. 244.
*Compression of Spinal Cord Due to Ventral Extradural Cervical Chondromas. B. Stookey, New York.—p. 275.
Cerebellar Symptoms Produced by Supratentorial Tumors. F. C. Grant, Philadelphia.—p. 292.
*Tumors of Nervus Acusticus: Signs of Involvement of Fifth Cranial Nerve. H. L. Parker, Rochester, Minn.—p. 309.
*Lesions in Brain in Death Caused by Freezing. L. Bender, Chicago.—p. 319.
Mental Conditions in Aged. J. H. W. Rhein, N. W. Winkelman and C. A. Patten, Philadelphia.—p. 329.
*Intractable Chronic Pain in Lower Segments of Body: Relief by Means of Sacral Epidural Injections. N. Viner, Montreal.—p. 336.
*Studies in Epilepsy: V. Fibrin Content of Blood. W. G. Lennox, Boston.—p. 345.
*Tuberculoma of Central Nervous System. F. N. Anderson, Philadelphia.—p. 354.
*Central Neuritis: Etiology and Symptomatology. G. H. J. Pearson, Philadelphia.—p. 366.
Rapid Method for Staining Myelin Sheaths. A. Weil, New York.—p. 392.

Compression of Spinal Cord by Extradural Chondromas.—A group of primary extradural ventral chondromas producing compression of the spinal cord were found by Stookey to present a definite clinical entity which heretofore has been unrecognized. The more typical and recognizable forms give rise to unilateral spasticity, focal atrophy and fibrillary twitchings in the homolateral muscles of one or two segments at the level of the neoplasm, with changes in pain and temperature on the opposite side of the body. Other modalities of sensation are unaltered. According to the position of the tumor three syndromes can be made out: the syndrome of bilateral ventral pressure, the syndrome of unilateral ventral pressure and the syndrome of root pressure. The lumbar manometric test may indicate partial or complete obstruction. Iodized oil may pass the tumor and not give any indication of its presence. The extradural cervical chondromas arise from the intervertebral disks, usually in the midcervical region, are about 1.5 by 0.5 cm. in size, elastic and sharply circumscribed and cause discrete though definite pressure on the ventral column of the spinal cord. Because the tumors are small, extradural and from two to three segments higher than the sensory level they are readily overlooked, unless considered as a possible cause of compression of the spinal cord at the time of operation. On removal, the tumor appears as thin frayed layers of cartilaginous material leaving a definite depression along the ventral surface of the vertebral canal. Hemilaminectomy and a transdural approach is considered the operation of choice.

Tumors of Acoustic Nerve.—Parker analyzed fifty-three proved cases of tumor of the acoustic nerve, especially with regard to involvement of the fifth nerve. In all except one of these cases there was some sign of involvement of the nerve, and these signs were second in importance to those of injury to the eighth nerve. Paresthesia was common, and in five cases it antedated the symptoms of involvement of the eighth nerve. Objective signs of involvement of the nerve, such as anesthesia and weakness of the muscles of mastication, were less marked. Disturbance of the corneal reflex was present in fifty-one cases. Pain occurred in four cases, but in only one was it conspicuous. In this case the type was identical with that of major trigeminal neuralgia, pursued the same course and was temporarily relieved by the same methods as are used in that disease.

Brain Lesions Caused by Freezing.—In one human being, one guinea-pig and one rabbit that were frozen to death, congestion and miliary hemorrhages were found by Bender in all parts of the brain. There was also marked pulmonary congestion. In the human brain, the nerve cells also showed severe vacuolization.

Sacral Epidural Injection for Relief of Pain.—The method of epidural injection evolved separately by Cathelin and Sicard for the relief of enuresis, in which it proved of doubtful value, has proved remarkably effective in Viner's experience in the worst and most persistent cases of sciatica, has been of decided value in tabetic lightning pains, in amputation stump neuralgia, in traumatic neuritis and in arthritis deformans, and has been of some help in cancerous and other conditions of the sacral region. In general, it seems correct to say that this method is efficient in all kinds of chronic peripheral pain originating at or below the third lumbar segment which is not of vascular or sympathetic origin.

Fibrin Content of Blood in Epilepsy.—Measurements of blood and plasma fibrin have been made by Lennox in 100 patients with epilepsy. The average concentration of fibrin in the plasma was approximately 19 per cent above the average concentration for normal persons obtained by Foster. The concentration of plasma fibrin was abnormally high in thirty-four of the patients. In seven the hyperinosis might be accounted for by the presence of pyogenic or syphilitic infection. In the remaining twenty-seven patients the cause for the increased concentration of blood fibrin was not apparent. The possible significance of these observations, especially as regards abnormal protein metabolism, function of the liver and physical properties of the blood, is discussed.

Tuberculoma of Central Nervous System.—Twenty-seven cases of proved tuberculous neoplasms of the central nervous system are reported and analyzed by Anderson from several points of view. Among all cases studied in his laboratory, tuberculomas comprise between 1.4 and 1.6 per cent; among all tumors studied in the same period, they constitute about 15 per cent.

Central Neuritis.—Central neuritis is a disease of the large and medium sized pyramidal cells of the cerebral cortex. The cell body is swollen, the Nissl substance is dissolved and the nucleus is displaced. In severe forms the neurofibrils degenerate, the nucleus is extruded and the cell dies. Degenerative changes are found in the axons. In some cases the glia is affected. Thirty-one cases of central neuritis were found by Pearson among more than 1,000 consecutive necropsies. A study of the clinical symptomatology indicates that the presence of central neuritis cannot be determined during life. Central neuritis is not a prelethal condition nor does it seem to be caused by axonal injury, infection, starvation or exogenous or known endogenous toxins. There are some facts to substantiate the view that it results from a disturbance of the finer metabolic processes, and the theory is advanced that some disturbance of the more delicate processes of metabolism prevents the cell from extracting nutritive material from the tissue juices. Autometabolism occurs, and if the process is severe the nucleus is extruded and the cell dies. The names applied to this condition are misnomers. Primary cytolytic degeneration is a preferable term.

Archives of Otolaryngology, Chicago

8: 127-248 (Aug.) 1928

Tonsil Problem: Research Work of Viennese Clinic. R. Waldapfel, Vienna.—p. 127.
Aseptic Cavernous Sinus Thrombosis. H. C. Todd, Oklahoma City.—p. 138.
Frontal-Ethmosphenoidectomy: Operation Performed Under Local Anesthesia: New Osteoplastic Flap. E. C. Sewall, San Francisco.—p. 144.
Marked Deafened Areas in Normal Ears. E. P. Fowler, New York.—p. 151.
Phrenospasm and Cardiospasm in Mega-Esophagus. P. Guns, Louvain, Belgium.—p. 156.
Angina Ludovici: Anatomic and Clinical Study. C. D. Blassingame, Memphis, Tenn.—p. 159.
Osteomyelitis of Frontal Bone: Four Cases. V. Dabney, Washington, D. C.—p. 177.

Effect of Otitis Media on Patients Previously Operated on for Mastoiditis. H. I. Lillie, Rochester, Minn.—p. 183.
Laryngeal Necrosis as Possible Complication of Treatment of Goiter by Irradiation. R. A. Kilduffe, Atlantic City, N. J.—p. 185.
Lavage of Maxillary Antrum Through Natural Orifice in Infants. S. Yankauer and I. B. Goldman, New York.—p. 187.
Intradural Diseases in Relation to Rhinology and Otology: Critical Survey of Recent Literature. W. P. Eagleton, Newark, N. J.—p. 193.

Arkansas M. Society Journal, Little Rock

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Conservative Management of Hydronephrosis. H. W. E. Walther, New Orleans.—p. 51.
Heart Failure. N. S. Stern, Memphis, Tenn.—p. 55.
Acute Suppurative Parotitis. G. V. Lewis, Little Rock.—p. 58.

Endocrinology, Los Angeles

12: 245-376 (May-June) 1928

Studies of Endocrine Glands: II. Pituitary. A. W. Rowe and C. H. Lawrence, Boston.—p. 245.
Effects of Thyroxin Injections on Suprarenal Glands of Mouse. M. I. Preston, Stanford University, Calif.—p. 323.
Effect of Roentgen Rays on Suprarenal Glands. N. F. Fisher, E. Larson and A. Bachem, Chicago.—p. 335.
Epinephrine Content of Suprarenal Capsule in Chick Embryo. M. Okuda, Nagasaki, Japan.—p. 342.

Florida M. Association Journal, Jacksonville

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Hypertrophy of Thymus Gland: Cases. G. S. Osincup, Orlando.—p. 67.
Id.: Treatment of Thymus Gland in Infants. J. A. Pines, Orlando. —p. 69.
Instrumentation and Operative Technic with Postoperative Results of Electro-Ensecleating Tonsillotome. F. P. Herman, West Palm Beach. —p. 71.
Nonsurgical Treatment of Infections of Biliary Tract. G. P. Hamner, Tampa.—p. 74.
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Lung Cancer: Three Cases. J. C. Davis, Quincy.—p. 83.
Osgood-Schlatter's Disease: Case. S. W. Fleming, West Palm Beach. —p. 86.
Wassermann Test. I. C. Youmans, Miami.—p. 88.
Internal Injuries. J. C. Richardson, West Palm Beach.—p. 92.
Prenatal and Postnatal Care. W. E. Van Landingham, West Palm Beach.—p. 94.
Plea for More Conservative and Intelligent Treatment of Gonorrhea. M. M. Coplan and R. J. Holmes, Miami.—p. 97.
Cesarean Section: Twenty-One Cases. T. W. Hutson and J. R. Graves, Miami.—p. 100.

Georgia M. Association Journal, Atlanta

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Salvage. E. E. Murphey, Atlanta.—p. 333.
Georgia's Health Problems. T. F. Abercrombie, Atlanta.—p. 336.
Primary Pulmonary Aspergillosis. E. F. Wahl and M. J. Erickson, Thomasville.—p. 341.
Tularemia. J. A. Redfearn, Albany.—p. 350.
Importance of Eye Examinations in Diagnosis of Intracranial Lesions. C. E. Dowman, Atlanta.—p. 354.

Journal of Experimental Medicine, Baltimore

48: 315-455 (Sept. 1) 1928

Serologic Differentiation of Steric Isomers. K. Landsteiner and J. van der Scheer, New York.—p. 315.
*Influence of Cholesterol on Experimental Tuberculosis. R. E. Shope, Princeton, N. J.—p. 321.
*Chemical Changes in Blood of Dog in Experimental Peritonitis. T. G. Orr and R. L. Haden, Kansas City, Kan.—p. 339.
Effect of Oxidation of Filtrates of Chicken Sarcoma (Chicken Tumor I—Rous). J. H. Mueller, Boston.—p. 343.
Relation of Capsular Substance of B. Coli to Antibody Production. T. Smith, Princeton, N. J.—p. 351.
*Reciprocal Effects of Concomitant Infections: III. Influence of Vaccinia and of Vaccinal Immunity on Reaction to Infection with Experimental Syphilis (Intracutaneous Inoculation). L. Pearce, New York. —p. 363.
Action of Levaditi Strain of Herpes Virus, and of Vaccine Virus in Guinea-Pig: Single and Combined Effects. P. K. Olitsky and P. H. Long, New York.—p. 379.
Studies on Indifferent Streptococci: I. Separation of Serologic Group—Type I. C. H. Hitchcock, New York.—p. 393.
Id.: II. Observations on Distribution of Indifferent Streptococci in Throats of Rheumatic and Nonrheumatic Individuals. C. H. Hitchcock, New York.—p. 403.
Further Experiments with Intradermal Pneumococcus Infection in Rabbits. K. Goodner, Boston.—p. 413.
*Rôle of Streptococci in Experimental Poliomyelitis of Monkey. P. H. Long, P. K. Olitsky and F. W. Stewart, New York.—p. 431.
Virus Neutralization Experiments with Rosenow's and Pettit's Anti-poliomyelitic Serums. F. W. Stewart and P. Haselhauer, New York. —p. 449.

Influence of Cholesterol on Experimental Tuberculosis.—The accumulation of cholesterol or cholesterol esters in tuberculous tissues, and especially in the actual anatomic tubercles, suggested to Shope the possibility of using this substance in some chemotherapeutic experiments. Since it appeared to be capable of penetrating and localizing in tubercles, it seemed possible that, if compounds could be made that would contain cholesterol combined with other radicals known to possess bactericidal properties, they might prove to be of therapeutic value. To test the success of such an assumption two series of chemotherapeutic experiments were conducted. In the first series of experiments cholesterol alone was used in treating guinea-pigs experimentally infected with *B. tuberculosis*. In the second series various compounds containing cholesterol or an oxidation product of cholesterol were used. Cholesterol, administered intraperitoneally, definitely prolonged the lives of tuberculous guinea-pigs when the infection was of an acute type produced by inoculation with a small dose of very virulent human type organisms. Intraperitoneally administered cholesterol did not definitely prolong the lives of tuberculous guinea-pigs when the infection was of the chronic type produced by the injection of a small dose of human type tubercle bacilli of relatively low virulence, or when the infection was more acute owing to the injection of a large dose of organisms of low virulence. It had no beneficial effect on an acute type of infection produced by the bovine type organism. Cholesteryl chloride, cholesteryl toluide, cholesteryl anilide, sodium cholesterol sulphate and quinine cholesterylate did not significantly prolong the lives of tuberculous guinea-pigs. Sodium cholesterylate, in optimal dosage, definitely prolonged the lives of tuberculous guinea-pigs. There was a significant shortening in the duration of life of tuberculous guinea-pigs subjected to the trauma of intraperitoneal injection and repeated handling as compared with tuberculous guinea-pigs that were not handled or traumatized by intraperitoneal injections.

Blood Changes in Experimental Peritonitis.—A study of the blood chlorides, urea and nonprotein nitrogen and the carbon dioxide combining power in experimental general peritonitis is here reported by Orr and Haden. The similarity between the chemical changes in high intestinal obstruction and general peritonitis is noted. These chemical changes suggest that the cause of death may be, at least in part, the same in the two diseases.

Effects of Vaccinal Infection and Immunity on Reaction to Syphilis.—An experiment is reported by Pearce in which was studied the effects of a concomitant vaccinal infection and of vaccinal immunity on the reaction to syphilis in rabbits induced by intracutaneous inoculation. The results obtained showed that the reaction was modified by both conditions. A vaccinal infection initiated at the time of syphilitic inoculation was associated with a defensive reaction of lessened efficiency, the ensuing syphilis being more severe than in control animals. A state of vaccinal immunity present at the time of syphilitic inoculation was associated with a reaction of heightened efficiency, the ensuing syphilis being very mild. These results are in harmony with those obtained in other experiments in which the intratesticular route of syphilitic inoculation was employed.

Rôle of Streptococci in Experimental Poliomyelitis.—Long et al. could not determine that there exists any etiologic relation of the streptococci recovered from poliomyelitic tissues to poliomyelitis. The fermentation reactions of the microorganisms obtained from the air and from nonpoliomyelitic and poliomyelitic monkey brains indicate that bacteria from any of these sources are markedly different. So also with the serologic reactions of agglutination and precipitation. Furthermore, no agglutination was observed when the serum of monkeys convalescent from experimental poliomyelitis was mixed with any of the streptococci recovered or those received directly or indirectly from Rosenow. Moreover, the intracerebral injection with cultures, irrespective of their source, induced in rabbits a purulent type of meningo-encephalitis, often associated with streptococcic septicemia. This result is at marked variance with any known effects of the true filtrable virus of poliomyelitis in man and in the monkey.

Journal of Infectious Diseases, Chicago

43: 97-180 (Aug.) 1928

Surface Tension in Relation to Bacterial Growth: Lactobacillus Acidophilus and Lactobacillus Bulgaricus. A. A. Day and W. M. Gibbs, Chicago.—p. 97.
*Monilia from Osteomyelitis. C. L. Connor, Boston.—p. 108.
Changes in Blood Dextrose in Rabbits After Intravenous Injections of Histamine. M. L. Menten and H. M. Krugh, Pittsburgh.—p. 117.
Insulin Content of Pancreas Following Intoxication of Rabbits with Paratyphoid B Filtrate and Dysentery Bacilli. M. L. Menten and H. M. Krugh, Pittsburgh.—p. 121.
*Bacterial Adaptation to Acriflavine. V. Burke, C. Ulrich and D. Hendric, Pullman, Wash.—p. 126.
Choice of Antiseptic Dye in Mixed Infections. V. Burke, M. P. Jessup and S. Philips, Pullman, Wash.—p. 131.
Production of Potent Antipneumococcic Serum in Rabbits. B. L. Freedlander, San Francisco.—p. 137.
Studies on Botulinus Toxin: 2. Further Purification by Adsorption on Colloids. H. Sommer and P. T. Snipe, San Francisco.—p. 145.
Id.: 3. Acid Precipitation of Botulinus Toxin. P. T. Snipe and H. Sommer, San Francisco.—p. 152.
Id.: 4. Dialysis Experiments. H. Sommer, P. J. Nealon and P. T. Snipe, San Francisco.—p. 161.
Method of Inoculating Blood Plates for Identification of Hemolytic Streptococci. E. Valentine, San Francisco.—p. 167.
Incidence of Cloudy Reactions in Agglutination Tests for Salmonella Pullorum Infection. G. S. Schilling and S. J. Schilling, Fayetteville, Ark.—p. 172.

Monilia from Osteomyelitis.—A budding yeastlike organism forming reluctantly a mycelium in certain culture mediums, and otherwise behaving as *Monilia*, was isolated by Connor from an abscess of the buttock which communicated with the iliac bone. There had been a long-standing osteomyelitis of the humerus, and the organisms were seen in tissues from this lesion also. This strain of *Monilia* does not correspond with any described species so far as fermentation tests are concerned, but it is pointed out that such tests are unreliable as a means of differentiating the group of organisms variously called *Torula, Cryptococcus, Blastomyces, Oidia, Monilia* or *Oospora*. The nature of these organisms does not permit at present of a more elaborate classification.

Bacterial Adaptation to Acriflavine.—The experiments made by Burke et al. indicate that gentian violet has greater bactericidal action in vitro than neutral acriflavine for both gram-positive and gram-negative bacteria and in the presence or absence of blood. Blood reduces the bactericidal action of both dyes. No advantage is gained by mixing the two dyes. The dye most effective against the most resistant organism in the wound should be used. Since bacteria acquire specific dye tolerance in a few hours, rotation of dyes in the treatment of infections may be beneficial. The bactericidal strength of neutral acriflavine varies with the manufacturer. Different samples from the same manufacturer are nearly uniform in bactericidal action.

Medical Journal and Record, New York

128: 153-200 (Aug. 15) 1928

Importance of Examination of Spine in Presence of Intrathoracic or Abdominal Pain. J. Phillips, Cleveland.—p. 153.
African Yellow Fever. W. H. Hoffmann, Havana, Cuba.—p. 156.
Surgical Relief of Chronic Dacryocystitis and Epiphora: Dupuy-Dutemps et Bourguet Technic: Direct Anastomosis of Tear Sac with Nasal Mucous Membrane. J. J. Corbett, Boston.—p. 158.
Use of Gastroduodenal Tube. M. B. Kunstler, New York.—p. 160.
*Effect of Lumbar Puncture on Blood Pressure. G. S. Enfield, Denver, and M. C. Petersen, St. Peter, Minn.—p. 161.
Pulmonary Tuberculosis, Juvenile Type, as Related to Tuberculogenesis. C. B. Gibson, Meriden, Conn.—p. 165.
*Treatment of Aortic Aneurysm by Wiring and Electrolysis: Twelve Cases. H. A. Hare, Philadelphia.—p. 167.
Tumors of Kidney: Diagnosis and Treatment. W. S. Pugh, New York.—p. 169.
*Contrast Between Clinical and Chemical Data in Some Cases of Renal Insufficiency. F. D. Murphy and J. C. Bock, Milwaukee.—p. 173.
Acute Nephritis Following Transfusion. A. E. Oliensis, Philadelphia.—p. 178.
Case of Sterility in Male Due to Syphilis: Normal Birth Following Treatment of Both Parents. A. Strachstein, New York.—p. 180.
Chronic Infections of Prostate and Seminal Vesicles. C. H. Garvin, Cleveland.—p. 181.
Diseases and Death of King Louis XI of France. C. G. Cumston, Geneva, Switzerland.—p. 185.
Travel Notes on Africa. A. Schachner, Louisville, Ky.—p. 190.

Effect of Lumbar Puncture on Blood Pressure.—The influence of lumbar puncture on blood pressure was studied by Enfield and Petersen in 107 unselected patients of a psychopathic hospital. The effect was extremely variable. In a series of eighty-nine patients in whom 10 cc. of cerebrospinal fluid was removed there was an immediate fall in blood pressure in only forty-seven, or 52.8 per cent. Age, arterial changes and emotional tone were not factors in the results. The effect of inserting the spinal needle was inconstant, a rise in pressure being produced in only 33.4 per cent. In eleven of the sixteen patients in the dementia praecox group there was a marked decrease in blood pressure, both systolic and diastolic, at the end of twenty-four hours. Spinal drainage was done in eighteen patients, but the amount of spinal fluid withdrawn did not influence the behavior of the blood pressure. Spinal drainage does not lower the blood pressure in all cases. The return of the blood pressure to its normal level is relatively rapid after drainage of small or large amounts of spinal fluid, occurring within three hours in many cases. No essential difference was noted in the behavior of the blood pressure in subjects with or without organic brain involvement.

Treatment of Aneurysm by Wiring.—Hare emphasizes that aside from the fact that this method of treatment often prolongs life, its chief advantage is the almost immediate relief of pain, which is often intolerable. He has performed this operation thirty-seven times without accident at the time of operation or any evil sequence which could be attributed to it. Many of the patients were in a very desperate state as to the size of the aneurysm, and in a number the sac had so eroded the chest wall that bloody serum was oozing from the skin, so that gauze pads had to be constantly renewed. Necessarily, the procedure is of the nature of mending a piece of rotten hose, for the aortic wall is widely degenerated and after the most bulging and pulsating point is sealed another may give way later. It is absolutely essential that the gold wire used shall not have the ability to spring outward and erode the wall of the sac. It must have enough platinum in it to stiffen it so that it may be pushed through the needle, but it must coil in the sac as a tangled mass in which the clot forms with the aid of the coagulating effect of the positive pole. Care must be taken not to exceed 40 or 50 milliamperes or the tissues will be destroyed. The needle must be insulated to prevent electrolytic destruction of the skin and wall of the sac.

Diagnosis of Kidney Insufficiency.—A series of cases is presented by Murphy and Bock with a view to emphasizing the necessity of correlating the clinical observations and symptoms with the results of the laboratory examination. Cases are reported to show the unusual contrast that may take place between the clinical and blood chemical observations. It is shown that at times the patient appears clinically rather normal, though the blood chemistry indicates a sure and early death. The blood chemical figures may be elevated to an alarming degree, and by frequent blood determinations a gradual decrease is revealed, indicating a favorable change. Laboratory data cannot be relied on completely for diagnosis and prognosis in renal diseases, but are valuable only when they are interpreted in connection with the clinical signs and symptoms. A case of complete anuria lasting twenty-one days is reported.

New England Journal of Medicine, Boston

199: 305-350 (Aug. 16) 1928

*Tumors of Endometrial Origin. M. Douglass, Cleveland.—p. 305.
*Studies in Asthma: III. Use of Vaccines in Asthma and in "Colds." Frances M. Rackemann, Boston, and Margaret A. Scully, Newton, Mass.—p. 314.
*Appendiceal Abscess: Treatment of Appendix. J. Homans and J. H. Powers, Boston.—p. 319.
*Control of Health After Eczema and Psoriasis: Nutrition and Health of Skin. F. L. Burnett, Boston.—p. 321.

Tumors of Endometrial Origin.—Nine cases are reported and analyzed by Douglass. She says that certain biologic and histologic characteristics of the tumor tend to suggest that many of these neoplasms do not owe their development to transtubal dissemination of uterine mucosa cast off at the time of menstruation. The relative infrequency of "regurgitation" of menstrual blood spilled into the pelvis at menstruation through the tubes seems a most cogent argument against tubal dissemination, even though variations in the size of the tubal lumen both from congenital anomaly and from peristalsis must be admitted. Lesions occurring in sites covered by intact peritoneum without hemorrhagic ovarian cysts seem difficult to account for except by an

embryonic origin; viz., round ligament, and umbilical and rectovaginal septum tumors. It seems plausible that only immature embryonal cells capable of passing through diverse neoplastic changes could father tumors showing such varying histologic structure. The occurrence of the characteristic endometrial lesion in wounds in which the uterus has been opened suggests that transplantation and growth of the cells of uterine mucosa is possible but throws no light on the relative viability of menstrual endometrium, and on whether or not it is regurgitated at menstrual periods through the tubes with any degree of frequency. It seems probable that complete understanding of the etiology of these lesions has not yet been reached, and at present several modes of origin, depending on the site and characteristics of the lesion, must be accepted tentatively as causing their development.

Vaccine Therapy of Asthma.—Rackemann and Scully have used vaccines in the treatment of 346 patients with asthma. Of the 307 adults, the results were good in 238 and poor in sixty-nine. In thirty-nine children, however, the results were good in all cases. In the prevention of "colds," vaccines have been given to a series of 101 patients with good results in 68 per cent. Both in asthma and in colds these results are only temporary in most cases, but they could be reproduced by repetition of the treatment and were therefore important to the patient. Both in asthma and in colds, the figures for the whole series show that stock vaccines are just as effective as autogenous vaccines and this fact shows that the effect of vaccines is nonspecific. A closer study of those patients treated from year to year shows that repeated courses of treatment with the same kind of vaccine leads to the same result. When, however, the same patient is treated in different courses with different vaccines, the results are sometimes similar, which speaks for a nonspecific effect; but they are sometimes dissimilar, when one vaccine works better than another, and this fact speaks for a degree of specificity in the vaccine action. Neither in asthma nor in colds is it possible to show that one organism is more important than another in the cases as a whole. The authors suggest that the good effects of vaccine treatment depend on an unknown reaction which takes place when a particular vaccine is injected into a particular patient. Evidently the production of such a reaction depends on conditions which are to some extent restricted, and to this extent the treatment would appear to be specific. Whatever the mechanism, it is the same in asthmatic as it is in nonasthmatic individuals.

Appendiceal Abscess: Treatment of Appendix.—As a rule, when an abscess has been opened, a search is made for the appendix, which may well be found; but if a brief search is vain, the abscess is drained, and the diseased organ is left in situ. The question then arises: Shall the patient be urged to submit to a subsequent appendicectomy? According to Homans and Powers, surprisingly little material is available on which to base an answer to this question. At the Peter Bent Brigham Hospital, among 253 instances of abscess operated on during the last fifteen years, the appendix was removed 219 times, or in 86.6 per cent of all cases. Only thirty-four patients could, in fact, be found for whom drainage without appendicectomy was found necessary. It may be concluded that eccentric abscesses —such as form in the right flank or pelvis—are likely to include only the distal portion of the appendix; that perhaps one in five recurs after simple drainage, and that they can be treated by initial drainage through a short incision, followed, when the discharge has greatly diminished but before the sinus has healed, by removal of the appendix through a second incision made at McBurney's point. In most instances little difficulty will be experienced, firmly healed wounds will be left and the possibility of recurrence of the appendicitis will be eliminated. No such treatment is possible when the abscess is situated in the region of the cecum. Unless the appendix can be removed from such an abscess at the initial operation, the patient must return for interval operation or take his (one in five) chance of a recurrence.

Eczema and Psoriasis Metabolic Disorders.—Burnett stresses the fact that eczema and psoriasis are metabolic disorders and may be relieved by recognizing and correcting factors in a patient's mode of living that influence early and slight metabolic disorders, as shown by the indexes of absorption. But the prevention of subsequent attacks is brought about only by keeping a continual check on the action of the digestive system in normal absorption by the control of health.

199: 351-398 (Aug. 23) 1928

Newer Knowledge of Cancer Metabolism and Some Other Aspects of Cancer Research. A Review of the Literature. E. C. Glover, Boston. —p. 351.
"Complaint" as Center of Genetic-Dynamic and Nosologic Teaching in Psychiatry. A. Meyer, Baltimore.—p. 360.
Roentgen Treatment of Certain Diseases. L. B. Morrison, Boston.—p. 371.

199: 399-452 (Aug. 30) 1928

*The Care of the Heart in Pneumonia. G. M. Albee, Worcester, Mass. —p. 399.
*Lobar Pneumonia. F. D. Adams, Boston.—p. 402.
*Treatment of Empyema Following Pneumonia. H. Binney, Boston.—p. 410.
Specific Treatment (Felton's Serum) of Pneumonia. R. L. Cecil, New York.—p. 415.
Posterior Median Discission of Cervix. S. R. Meaker, Boston.—p. 427.
Laryngeal Tuberculosis: Plea for Early Diagnosis. S. Cline, Boston. —p. 429.
Results of Massachusetts Cancer Campaign, April 23-27, 1928. F. G. Balch, G. H. Bigelow and R. B. Greenough, Boston.—p. 430.

Care of Heart in Pneumonia.—Albee comments on the divergence of current views concerning the proper use of digitalis in pneumonia. He feels that much more work, both experimental and clinical, will be needed before a proper solution of this problem is obtained. Apart from digitalis, there is much in the treatment of pneumonia that tends to help the heart and the circulation. The general care of the patient, the relief of the abdominal distention by oil and enemas, the relief of pain and cough by morphine, the specific serum therapy and the like, so far as they diminish the toxemia and the bacteremia, will directly help the heart. Morphine will often change a small thready pulse to a fuller one, and will diminish the respiratory rate, especially if there has been pleural pain. The patient will breathe deeper and aerate better, thereby requiring fewer breaths than when the pain made him take short shallow ones. The diminished muscular action and the sleep that follow the relief from pain conserve the heart muscle. One therapeutic measure deserves special mention, as it has a direct bearing on the circulation, and that is bleeding. There are occasional instances in pneumonia when there is marked cyanosis and pulmonary edema. Such patients not only have consolidation of one part of the lung but also have moist bubbling râles indicating an edematous state in other portions of the lungs. In these conditions the removal of from 400 to 500 cc. of blood from one of the veins of the arm has at times been attended by marked improvement in the clinical condition of the patient. When such an effect is produced, it probably results from diminishing the load of venous blood in the pulmonary circulation. In selected cases, therefore, bleeding is a valuable aid in therapy. Caffeine sodiobenzoate as a respiratory stimulant at times has a slight beneficial effect in some of the toxic cases with marked dyspnea. Epinephrine helps at times when the blood pressure is low.

Analysis of Cases of Lobar Pneumonia.—In a series of 522 cases of lobar pneumonia analyzed by Adams, pneumococcus type I and group IV were the common etiologic factors. Pneumococcus type III gave the highest mortality rate. A positive blood culture is a sign of severe infection, and the later the blood culture is found positive, the graver the outlook. Save in the mild or atypical cases, a low leukocyte count is an unfavorable sign. Upper lobe involvement is more dangerous than lower lobe involvement, while patients with involvement of more than one lobe have the highest death rate. Empyema is by far the commonest and most important complication. It is often not recognized because of the frequency with which the so-called typical signs of fluid are not present. Exploration for pus in a suspected case is usually best delayed until the patient has recovered from the severe toxemia which accompanies the pneumonic infection.

Treatment of Empyema Following Pneumonia.—Results confirm Binney in the belief that preliminary aspiration is often of great value, and that, in accordance with the experience of many others, the closed method, as a routine procedure, combined with irrigation with surgical solution of chlorinated soda, gives a lower mortality rate than is obtained by open drainage methods, and also a lower incidence of chronic empyema.

New York State J. Medicine, New York

28: 1027-1086 (Sept. 1) 1928

Present Status of Practice of Medicine. L. R. Williams, New York.—p. 1027.
Oophorogenic and Psychogenic Uterine Bleeding. M. R. Robinson, New York.—p. 1036.
*Nervous and Mental Symptoms in Diseases of Blood: 141 Cases. J. H. Leiner, New York.—p. 1047.
Routine Blood Sugar Determination as Aid in Diagnosis: Résumé of Five Cases. C. M. Levin, Richmond Hill.—p. 1050.
Practicing Physician in Court. H. C. Coe, New York.—p. 1053.

Nervous and Mental Symptoms in Diseases of Blood.—Data are presented by Leiner on seventy cases of pernicious anemia, twenty-seven cases of leukemia, forty cases of Hodgkin's disease and four cases of polycythemia. In pernicious anemia there were neurologic symptoms in 78 per cent of the seventy cases. In a smaller series of thirty cases which were followed up for years, twenty-eight showed some neurologic involvement, in fifteen of which there was either posterior or lateral column implication, and ten of which showed only pyramidal and one case only posterior column signs. Out of forty-five cases, five showed mental symptoms. Out of twenty-seven cases of leukemia, seven showed nervous symptoms, five of which were neurotic symptoms and two mild pyramidal tract phenomena. Of the patients with Hodkgin's disease, fourteen showed neurologic symptoms; six had transverse myelitis, with the lesion lower in the cord in three and in the high cervical cord in three. Of the four cases of polycythemia, two were symptomatic. Two showed neurologically cranial nerve involvement, mild pyramidal tract involvement and also mental symptoms.

Northwest Medicine, Seattle

27: 363-408 (Aug.) 1928

Simple Goiter; Prevention. D. Marine, New York.—p. 363.
Malfunctions of Thyroid: Basic Principles Underlying Modern Treatment. J. R. Coffey, Portland, Ore.—p. 367.
Local Anesthesia in Major Surgery. E. N. Layton, Colfax, Wash.—p. 374.
Acute Glomerulonephritis. C. H. Hofrichter, Seattle.—p. 382.
Management of Acute Gonorrhea in Male. L. H. Jacobsen, Seattle.—p. 387.
Epidemic Cerebrospinal Meningitis: Four Cases in One Family: Ten Reported Cases. S. Tashjian, Dayton, Wash.—p. 389.
Submucous Resection in Children. R. E. Windham, Longview, Wash.—p. 392.
Examination of Minor Fractures and Injuries of Foot. E. J. Jasper, Astoria, Ore.—p. 396.

Ohio State Medical Journal, Columbus

24: 673-752 (Sept.) 1928

Treatment of Cancer. J. S. Horsley, Richmond, Va.—p. 693.
Psychic Factor in Diagnosis and Treatment of Disease from Standpoint of Internist. W. C. Stoner, Cleveland.—p. 697.
Acetic Acid Milk in Infant Feeding. B. S. Dunham, Toledo.—p. 701.
Health Problems of Small Town as Determined by Survey Method. M. E. Barnes, Greenville.—p. 704.
Eye and General Medicine. A. G. Farmer, Dayton.—p. 710.
Cystoscopy as Preliminary Procedure to Prostatectomy. F. W. Harrah, Columbus.—p. 712.

Philippine Islands M. Association Journal, Manila

8: 307-338 (July) 1928

Guide to Artificial Feeding of Infants. E. B. Salud, Manila.—p. 307.
*Ultraviolet Rays as Adjuvant in Treatment of Leprosy. M. C. Cruz, Culion Leper Colony.—p. 312.
*Results of Antileprosy Treatment in Children at Culion Leper Colony. C. Nicolas and E. Roxas-Pineda, Culion Leper Colony.—p. 314.

Ultraviolet Ray in Treatment of Leprosy.—The results obtained by Cruz by intensive ultraviolet irradiation of closed leprotic skin lesions were, on the whole, negative. He deems that this is probably due to the fact that the rays cannot penetrate deep enough to exercise their bactericidal effect, and the development of increased pigmentation in the irradiated part further limits the effectiveness of subsequent irradiations. It is possible that better results can be obtained by still more intensive treatment, but this cannot be given without producing severe burns. In leprotic ulcers the results were better. Here the lepromatous tissue is exposed directly to the ultraviolet rays. Trophic ulcers, however, are very different from true leprotic ulcers. They are not lepromas undergoing ulceration, but are the effects of trophic disturbances. They are more or less sclerosed, are poorer in blood supply than the latter, and show little or no reaction even after prolonged irradiation. As expected, the results were negative.

Results of Treatment of Leprosy in Children at Culion.—Of seventy children reported on by Nicolas and Roxas-Pineda, all except three were treated with intramuscular injections of the mixed chaulmoogra ethyl esters with 0.5 per cent iodine, either alone (fifty-four cases) or alternately with other chaulmoogra preparations (thirteen cases). The duration of the treatment varied from ten months to five years and six months. The majority had had more than two years' treatment. It is evident that the treatment of early or slightly advanced cases of leprosy in children with the newer chaulmoogra preparations is attended by a large percentage (54) of apparent cures.

South Carolina M. Association Journal, Greenville

24: 181-200 (Aug.) 1928

Place of Autopsies in Modern Medical Practice. K. M. Lynch, Charleston.—p. 183.
Infections of Maxillary Sinuses. M. R. Mobley, Florence.—p. 187.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Actinotherapy, London

3: 81-100 (Aug.) 1928

*Relative Effect on Blood Cytology of Irradiation by Mercury Vapor and Carbon Arc Lamps. K. C. Spence.—p. 82.
Ringworm Lamp. N. G. Hill.—p. 84.
Treatment of Certain Diseases of Eye by Ultraviolet Light. O. G. Hume.—p. 87.
Treatment of Traumatic and Chronic Inflammatory Conditions of Eye by Ultraviolet Light. C. Barrowman.—p. 92.

Effect on Blood Cytology of Mercury Vapor and Carbon Arc Lamps.—With the object of finding the effect on the blood picture of irradiation by artificial sources of light, about 200 blood examinations were made by Spence in fifty cases selected at random. Of the fifty selected, twenty-four patients were irradiated by a Kelvin, Bottomley and Baird type of mercury vapor lamp, and the remaining twenty-six were irradiated by a cored-carbon arc lamp. Before irradiation, most of the cases showed a somewhat low red cell count. The hemoglobin also tended to be low, and the color index ranged from 0.85 to 0.98. After irradiation, a slight but constant increase was found in both groups. The increase affected both the hemoglobin and the cells, but not equally. As a rule, the cells were increased to a greater extent than the hemoglobin with a resulting drop in the color index. After treatment by the mercury vapor lamp there was a definite increase in the total number of white cells, affecting both the polymorphonuclears and the lymphocytes. As a rule, the polymorphonuclears showed a greater increase than the lymphocytes, but occasionally the reverse was found. With two exceptions, in which the lymphocytes were diminished, both polymorphonuclears and lymphocytes were increased, and on the whole the amounts of the increase were of the same order in the two types of cell. After exposure to the carbon arc radiations, the total leukocytes increased to about the same extent as in the mercury vapor lamp group, but there was a tremendous increase in the small lymphocytes, so great that in the end the number exceeded that of the polymorphonuclears. When the absolute numbers of each type of cell were worked out, it was found that the whole of the total rise was due to the increase in small lymphocytes, which were often more than twice their original number. The polymorphonuclears were in most cases actually diminished; in others they were stationary or only slightly increased. In most cases the decrease was small.

British Medical Journal, London

2: 229-280 (Aug. 11) 1928

Historic Aspects of Ideas Regarding Dropsy. J. D. Comrie.—p. 229.
*Diseases of Coronary Arteries. G. A. Allan.—p. 232.
Etiology of Glaucoma. W. S. Duke-Elder.—p. 236.
*Mercurochrome-220 Soluble. J. Eyre, H. E. F. Notton and W. J. Pope.—p. 238.
*Artificial Heliotherapy in Routine Treatment of Surgical Tuberculosis. E. C. Mekie.—p. 241.
Tuberculosis as Seen by General Practitioner. R. Cameron.—p. 243.

Diseases of Coronary Arteries.—Out of 1,000 consecutive postmortem examinations made by Allan, there were 371 cases in which note was made by naked-eye observations of a lesion,

whether trifling or severe, of the coronary arteries. Of these 371 cases, 238 showed a definite lesion of the myocardium; 178 presented fibrosis, either patchy or diffuse; 12 fibrosis with fatty change, and 48 fatty change alone. In 133, or 35.9 per cent, no obvious change was present, or there was only simple or brown atrophy or hypertrophy. Thus the predominant lesion present was fibrosis, as it was found 190 times (51.2 per cent) in 371 cases with coronary artery lesions. In the remainder of the 1,000 cases in which no lesion of the coronary arteries was noted, fibrosis occurred in only sixty-eight (10.8 per cent). The lesions found in these 371 cases, with the percentage incidence of fibrosis, were as follows: atheroma, 299, with fibrosis in 153; arteriosclerosis, 168, with fibrosis in ninety-two; calcification, forty, with fibrosis in thirty-one; syphilis (at or near an orifice), thirteen, with fibrosis in five. Using fibrosis, then, as an index of the effect of the various lesions of the coronary arteries, it was found that calcification when present was the factor most likely to produce a lesion of the myocardium. It was usually found in association with atheroma or with atheroma and arteriosclerosis. There were ninety-seven cases in which the lesion of the arteries was specially noted as producing definite narrowing or actual blockage of the lumen. Atheroma was present in eighty-five, with fibrosis in 82 per cent; arteriosclerosis in thirty-one, with fibrosis in 84 per cent; calcification in thirty-three, with fibrosis in 85 per cent, and syphilis in seven, with fibrosis in 57 per cent. Fibrosis was present in seventy-eight, or 80.5 per cent, of the ninety-seven cases, in contrast with 51.2 per cent of the whole group. Thus, it may be inferred that when a lesion is sufficiently severe to narrow the lumen, no matter what the lesion, fibrosis is the natural result. Fifty-eight patients died suddenly from coronary artery disease, or disease in which there was definite occlusion of a coronary artery or main branch. Of the fifty-eight, atheroma was present in forty-nine; arteriosclerosis in thirteen; calcification in twenty, and syphilis in eleven. It is important to note that while this group is a little less than one sixth of the total, about one sixth of the cases of atheroma are found in it, one half of the cases of calcification, three fourths of the cases of syphilis, but only one twelfth of the cases of arteriosclerosis. This supports the view that atheroma, the commonest lesion, is also a serious one, while calcification or syphilis materially increases the gravity of the case in the direction of promoting occlusion of the vessel. Fibrosis was present in forty-eight of these cases, but there were ten in which there is no note of any fibrosis in the heart muscle. From this study, in addition to the general information regarding the frequency of the lesions and their effects, three points emerged which are worthy of note: 1. Severe coronary artery narrowing may be present without obvious lesion in the myocardium. 2. Old standing severe arterial lesions and actual occlusion with fibrosis may be present without a clinical history of their occurrence. 3. Patients may die with symptoms suggesting coronary artery occlusion in whom no such lesion is found.

Effectiveness of Mercurochrome.—The results obtained by Eyre et al. in this study suggest that the "source of origin" of the drug is of more importance than the magnitude of the dose given, with certain limits. The various specimens of mercurochrome on the market differ markedly in their chemical composition. Toxicity appears to bear a direct relationship to purity of composition. The nearer mercurochrome approximates in its analytic results to the requirements by theory, the better the preparation as regards therapeutic efficiency and low toxicity.

Artificial Heliotherapy in Surgical Tuberculosis.—A study of his series of cases forces Mekie to the conclusion that the opinion which many of the earlier observers had that artificial heliotherapy would prove an almost specific treatment in cases of surgical tuberculosis has not been justified. In the series here detailed cases treated by heliotherapy do not show any marked improvement over the cases of a similar nature treated without heliotherapy. Artificial heliotherapy does not change the fundamental principles of treatment of surgical tuberculosis. The efficient local measures taken to insure rest and the general sanatorium treatment are the main methods to be adopted; heliotherapy is a useful aid to treatment, as are many drugs.

Indian Medical Gazette, Calcutta

63: 357-416 (July) 1928

Osteomalacia: Sixty-Nine Cases. V. B. Green-Armytage.—p. 357.
Organic Aromatic Compound of Bismuth Suitable for Intravenous Injection in Treatment of Frambesia. R. N. Chopra, J. C. Gupta and M. N. Mullick.—p. 361.
Apparatus for Facilitating Radiography of Limbs. J. H. Barrett.—p. 363.
Special Roentgen-Ray Technic for Examination of Body of Mandible. J. H. Barrett.—p. 364.
Infestation of Human Intestine by Coprid Beetles in Bengal. M. O. T. Iyengar.—p. 365.
Breeding and Habits of Eye-Fly, Siphonella Funicola, Meij. D. N. Roy. —p. 369.
Antimony (Urea-Stibamine) Test for Kala Azar. A. N. Bose, S. K. G. Dastidar and B. N. Bagchi.—p. 370.
Electrocardiology. R. S. C. Banerjee Bahadur.—p. 372.
Anesthesia of Abdomen. W. F. Brayne and D. C. Sen Gupta.—p. 381.
Black Tongue: Case. R. Green.—p. 381.
Standards for Maclean's Urea Concentration Test in Healthy Indians. H. Stott and V. S. Mangalik.—p. 384.
"Strangulated Hernia": Case. C. H. Reinhold.—p. 387.
Hysterical Blindness: Case. S. P. Shroff.—p. 388.
Electrocoagulation (Diathermy). P. P. Lalvani.—p. 388.
Dermal Leishmanoid: Case. U. N. Brahmachari and S. C. Banerjee. —p. 389.
Floating Spleen: Splenectomy: Recovery. J. B. Vaidya.—p. 390.
Fatal Exfoliative Dermatitis as Complication of "Sanocrysin" Treatment of Pulmonary Tuberculosis. J. M. Talati.—p. 391.
Afebrile B. Typhosus Enterocolitis. B. P. Tribedi.—p. 393.
Delayed Putrefaction After Burial. I. S. Dave.—p. 394.
Antimalarial Properties of Plasmochin. A. R. Majumdar.—p. 394.
Intravenous Use of Quinine and Arsenic in Algid Cases of Malaria. S. J. Bellgard.—p. 396.

Journal of Tropical Medicine and Hygiene, London

31: 185-200 (Aug. 1) 1928

Metadysentery and Metadysentery Bacilli: Classification of Bacterial Dysenteries. A. Castellani.—p. 185.
Sodium Oleate and Titanium Lipase in Cancer Treatment. D. Gardner. —p. 194.
Disease Among Australian Aborigines. J. B. Cleland.—p. 196.

Medical Journal of Australia, Sydney

2: 101-132 (July 28) 1928

Bacterial Flora of Female Genital Passages in Pregnancy and Puerperium: Puerperal Infection. L. M. Bryce.—p. 102.
Radiologic Aspect of Diseases of Stomach and Duodenum. P. Parkinson. —p. 114.
Pyeloscopy. J. L. Jona.—p. 118.
Narcolepsy. H. Willis.—p. 119.
Recovery in Blackwater Fever After Blood Transfusion. R. J. Wright-Smith.—p. 120.

Practitioner, London

121: 69-136 (Aug.) 1928

Lichen Planus. E. G. G. Little.—p. 69.
Warts and Their Treatment. A. C. Roxburgh.—p. 80.
*Familial Infection of Chronic Sinusitis. P. Watson-Williams.—p. 93.
Criminal Abortion. L. A. Parry.—p. 99.
Diverticulitis: Five Cases. R. Warren.—p. 117.
Reflexes and Muscular Atrophies in Arthritis Deformans of Hip Joint. S. M. Rendall.—p. 121.

Familial Infection of Chronic Sinusitis.—Watson-Williams points out again that there is good reason to suppose that chronic nasal focal sepsis is a causal factor in appendicitis and gastro-intestinal catarrh, and that abdominal subinfections tend to prevail in families exhibiting a proclivity to chronic naso-oral sepsis. Of ninety consecutive patients with definite infective nasal sinusitis previously cited, no fewer than fourteen had undergone appendicectomy; that is, more than 15.5 per cent. Moreover, of these fourteen, two had also undergone operation for gastroduodenal ulcers, and two others who had escaped appendicectomy had had gastric ulcer; hence, of the ninety, almost 19 per cent had had operations for one or the other conditions. Watson-Williams suggests that a child, when the subject of a nasal sinus focal infection, rarely escapes septic infection of its tonsils and adenoids, and that when these have alone been removed the persistent reinfection of the remaining lymphoid tissue causes recurrence of the adenoids, perhaps once or twice. This child will tend to infect brothers and sisters; it gets the credit of starting the family colds, although auto-immunization may in time confer a relative immunity on the offender. But if that child grows up and marries, as a carrier parent he is prone to infect members of his family, and in some cases investigation of such an unsuspected source of infection in children has revealed the fact that a parent has been the subject of a long-standing nasal sinus infection. What has been accepted as inborn familial constitutional weakness may, perhaps, be more correctly explained as "carrier infectivity." A number of illustrative cases are cited.

Archives des Maladies de l'App. Digestif, etc., Paris

18: 601-720 (June) 1928

*Splenomegalic Gastrorrhagia. R. Grégoire and P. Emile Weil.—p. 601.
*Diagnosis of Chronic Cholecystitis. K. M. Routkevitch.—p. 607.
*Cholestography by Peroral Route. Drouet, Gerbaut and Grégoire.—p. 617.
Elimination of Bases in Urine. R. Goiffon.—p. 623.
*Cholesterol Content of Blood in Pulmonary Tuberculosis. I. Gavrila and V. Vior.—p. 633.
*Cholesterol Content of Blood in Chronic Nephritis. I. Gavrila and C. Berariu.—p. 645.

Gastrorrhagia Due to Splenomegaly.—Grégoire and Weil report five cases of sudden vomiting of large quantities of red blood by persons with splenomegaly. They contend that the diagnosis of hemorrhage from latent gastric ulcer should never be made until the size of the spleen has been demonstrated to be normal, because, although sudden profuse hemorrhage from the stomach is most frequently due to a latent gastric ulcer, it is occasionally due to an unrecognized splenomegaly.

Clinical Diagnosis of Chronic Cholecystitis.—Routkevitch maintains that there is no difference between the very variable pain produced by chronic cholecystitis and the pain produced by a pyloric or a duodenal ulcer or any other inflammatory process in the abdominal cavity. The diagnosis cannot be based on it alone and the cases in which one can palpate the gallbladder are very rare, owing to its retraction or to the flaccidity of its wall. The absence of Guéneau de Mussy's point in 40 per cent of the cases of chronic cholecystitis and its presence in a series of other diseases diminishes the value of this sign. The painful points have only a relative diagnostic value. Painful sensitiveness of the lower margin of the liver in the region of the right rectus muscle is found in all cases of chronic cholecystitis and is probably due to the accompanying pericholecystitis. Changes in the position of the gallbladder are produced by changes in the position of the lower margin of the liver: when this descends, the gallbladder, owing to the rotation of the liver, is displaced inward, toward the right rectus muscle.

Peroral Administration of Tetraiodophenolphthalein in Cholecystography.—Although the peroral route for the administration of tetraiodophenolphthalein in cholecystography is the one most commonly used in France, Drouet et al. consider it unreliable. In the films obtained following peroral administration of tetraiodophenolphthalein, the gallbladder is always less clearly defined than in films obtained following its intravenous injection; inasmuch as most authors consider that a poorly defined gallbladder indicates changes in its wall, the former films lead to incorrect assumptions.

Cholesterol Content of the Blood in Pulmonary Tuberculosis and Its Prognostic Significance.—From the study of the cholesterol content of the blood serum from 100 patients suffering from pulmonary tuberculosis, Gavrila and Vior conclude: 1. In both the localized and diffuse fibrous forms of pulmonary tuberculosis and in fibrosed phthisis there occurs a hypercholesteremia which is more marked when the lesions are inactive and are not undergoing evolution. 2. In the localized ulcero-caseous form there also occurs a hypercholesteremia, which is particularly marked in cases in which the lesions are inactive and are not undergoing evolution. 3. In the diffuse ulcero-caseous form hypocholesteremia occurs when the lesions are active; a slight tendency toward hypercholesteremia occurs when the lesions are stationary. 4. Exudative pleurisies do not seem to influence the cholesterol content of the blood. 5. The factors that play a rôle in the modifications of the cholesterol content of the blood in tuberculous patients, in the order of their importance, are: (*a*) activity or inactivity of the lesions; (*b*) state of immunity of the organism; (*c*) anatomicopathologic form. 6. Hypercholesteremia indicates a state of well developed immunity and inactive pulmonary lesions and is therefore of good prognostic import; hypocholesteremia, on the contrary, denotes a feeble state of immunity and acute lesions, and is, therefore, of bad prognostic import.

Cholesterol Content of the Blood in Chronic Nephritis.—From a study of the cholesterol content of the blood in 100 cases of chronic nephritis Gavrila and Berariu conclude: 1. In the majority of cases of chronic nephritis a more or less marked hypercholesteremia occurs. 2. There is no relation between the height of the arterial pressure and the cholesterol content of the blood. 3. Likewise, there is no relation between the degree of the hypercholesteremia and the retention of nitrogen or chlorides. 4. There does not seem to exist any direct relation except between albuminuria and hypercholesteremia; patients with the most marked hypercholesteremia also present the most marked albuminuria, but this relation is not absolute. 5. When a series of cholesterol determinations is made in the same patient during treatment, it is found that the variations in the cholesterol content of the blood do not parallel the variations in the arterial tension, the nitrogen or chloride content of the blood, or the albuminuria.

Journal de Chirurgie, Paris

31: 801-940 (June) 1928

Use of Metal Band in Fractures of Diaphysis. M. Robineau and A. Moruzi.—p. 801.
*Cancer of Breast. M. Ducuing.—p. 814.

Cancer of the Breast Treated by Surgery Alone.—From a study of 106 cases of cancer of the breast observed prior to December, 1926, and treated by surgery alone (eighty-five classical Halsted operations), Ducuing concludes: 1. Cancer of the breast is a very grave condition because it is practically never operated on at the beginning and because only 3 per cent of the patients do not have enlarged regional glands when they consult the surgeon. 2. A large number of patients operated on die of recurrence during the first year (20.7 per cent), but the mortality is definitely lower during the following years (3.7 per cent in the third and fourth years and 1.8 in the fourth and fifth years). 3. Forty-three per cent of the patients operated on are still alive after the third year, whereas only 17.9 per cent survive the fifth year. 4. The fact that the patients are alive does not signify that they are cured. Only 23 per cent of the patients still alive after the third year are found to be free from recurrence; after the fifth year only 8.08 per cent are without recurrence. 5. The criterion of five years without recurrence is without value with regard to cure. 6. Even the patients who have lived without recurrence for ten years following operation can hardly be considered as permanently cured. 7. Although the percentage of cures at the end of the five year period is small, one should not overlook the marked advantages of the operation: it prevents ulceration, renders the death of the patient less painful, and simplifies the duties of those taking care of him.

Presse Médicale, Paris

36: 1009-1024 (Aug. 11) 1928

*Arterial Hypertension of Renal Origin. L. Bard.—p. 1009.
Disturbance in Mineral Equilibrium in Edema. P. L. Violle and P. Dufourt.—p. 1011.

Physiologic Significance of Arterial Hypertension of Renal Origin.—According to Bard, it is certain that variations in blood pressure produce variations in the functional activity of the glomeruli and the tubules of the kidney and that both the glomeruli and the tubules, on the other hand, are capable of producing arterial hypertension as a means of defense against pathologic processes attacking them. In nephritis the arterial hypertension, like the cardiac hypertrophy, is a phenomenon of the adaptation of the organism to the pathologic conditions created by the disease.

Gazzetta degli Ospedali e delle Cliniche, Milan

49: 621-652 (May 20) 1928

Percussion Resonance of Subrenal Regions. I. Sacchetto.—p. 621.
*Tertiary Syphilitic Lesions of Trachea. U. Virgili.—p. 624.
*Hemorrhage of Reproductive Organs in Women of Advanced Age. Benthin.—p. 629.

Tertiary Syphilitic Lesions of the Trachea.—Syphilitic involvement of the larynx and trachea, Virgili states, occurs almost exclusively in the secondary or tertiary stage. Tracheal involvement is less common than laryngeal involvement, though often there are lesions in both organs. Diagnosis in the initial stage, and especially when other symptoms of syphilis in the organism are lacking, is extremely difficult without laryngoscopy or tracheoscopy. In syphilis of the trachea, tracheoscopy shows a roundish swelling on the tracheal wall, localized or diffuse, and presenting a smooth and reddish or yellowish surface, indicating incipient softening, at the protruding point. The ulceration has a crater-like shape, with an oily looking base and clean raised and reddish margins. In doubtful cases the

therapeutic test should be applied. Virgili follows Lacapére's method: Treatment is begun with intravenous injections of neoarsphenamine; if the lesions improve, the neoarsphenamine should alternate with bismuth until the lesions heal, and then bismuth should be used exclusively for the remaining period of treatment. The author reports a case of syphilitic lesions, with perforation of the trachea, in a man, aged 35, which responded promptly to intravenous injections of neoarsphenamine. After the fourth injection, the syphiloderma became cicatrized and the tracheal perforation was perceptibly narrowed. The perforation closed completely by the end of the first series of treatments, and left no sign of stenosis.

Hemorrhage of the Reproductive Organs in Women of Advanced Age.—Benthin feels that the general practitioner is too much inclined to assume that postclimacteric hemorrhage in elderly women is always due to a malignant tumor. Such hemorrhages are by no means rare. Of the elderly women in the gynecologic clinic 60 per cent present this disorder and no other. In a series of 131 cases collected by the author, cancer was the cause of the hemorrhage in only fifty-six cases, and in seventy-five of the cases there was no tumor of any kind, either benign or malignant. The mild cases and those of short duration are not taken into account. If the uterus is involved, it is most commonly the portio or the cervix. Cervical polyps are found in most cases—in from 16 to 20 per cent of all cases of postclimacteric hemorrhage. Erosions of the portio are comparatively rare, and usually are associated with prolapse. Malignant tumors are a more frequent involvement of the portio. Trauma (of coital origin), tuberculous ulcers, and, in rare cases, varices may be considered. In a number of cases the corpus is involved, but in that case it is rare for tumor to be the cause. If there are myomas, they are found in the submucosa. Cancerous degeneration is the least frequent cause, but will account for 10 per cent of the cases. In the great majority of cases with corpus involvement the causal process is relatively harmless.

Pediatria, Naples

36: 507-562 (May 15) 1928

*Bronchopneumonia in Infants. A. Bocchini.—p. 507.
*Case of Grave Pernicious Anemia. R. Pastore.—p. 517.
*Asthma in Relation to Malaria. A. Zallocco.—p. 523.

Bronchopneumonia in Infants.—Bocchini discusses the six types of bronchopneumonia in infants recognized by Nassau: simple pulmonary, cardiovascular, atonic, alimentary, meningitico-convulsive and toxic. After indifferent results secured from chemotherapy, serotherapy and immunotherapy Bocchini decided to follow Nassau's therapeutic methods. He describes his experiences, during the past year, in about sixty cases, at least half of which were of the "simple pulmonary" type, in which the symptomatology involves solely the respiratory apparatus. Almost all the infants were breast-fed, in a good state of nutrition, without hereditary taint, and without serious signs of rickets. The treatment in these cases was reduced to a minimum. Bocchini advised baths for the purpose of lowering the temperature when it threatened to become too high. To diminish the restlessness of the patient, he made use of sedatives, preferably chloral hydrate by the rectal route. Even in the cold months (Italy), he advised keeping the patient in the open air, at least for several hours a day, and, if possible, in the sun. To give the child more freedom of respiratory movement, he recommended that it be carried in the arms as much as possible, changing the position often. If the pulmonary involvement was extensive and cyanosis and dyspnea were marked, he administered large amounts of oxygen. In the cardiovascular type, the treatment was more active. In these cases he gave generous injections of dextrose solution as a routine measure. The results were more than satisfactory. Bocchini emphasizes the point that in infants bronchopneumonia is a disease that must be regarded not as a simple local infection but with relation to the lesions and disturbances that it may cause in various organs and systems. The treatment must therefore not be confined to the pulmonary involvement but must likewise combat the other manifestations, which are sometimes more to be feared than the bronchopulmonary process itself.

Case of Grave Pernicious Anemia in Boy.—A boy, aged 11, had hemoglobin, 15 per cent; erythrocytes, 1,000,000; leukocytes, 4,000. Subcutaneous injections of human blood in small quantities (10 cc. at a time) were administered daily. With the second injection, the general condition began to improve. The child was more active; the cyanosis and the heart beats were diminished in intensity; the pulse was more regular and of better volume, and the vomiting ceased. The injections of blood were continued on alternate days and fresh bone marrow was given daily. After a week there was considerable improvement. The boy was wide awake; the visible mucosae were pink, and the appetite began to return. The hemoglobin was now 30 per cent and the erythrocyte count 2,200,000. After two weeks there was a setback lasting two days, after which the patient again improved and gradually acquired a slightly ruddy color. The fever had almost disappeared, the appetite returned and the state of nutrition improved. The pulse was good. The hemoglobin was 38 per cent and the erythrocyte count 2,380,000, the leukocyte count was normal. After two months' stay in the hospital, the patient was discharged. Two months later, the erythrocyte count was 3,200,000; hemoglobin, 60 per cent; leukocyte count, 8,600. Pastore concludes that, if the myeloid activity is not completely exhausted, a restoration of the hematopoietic function of the bone marrow can be hoped for. In such cases, opotherapy may exert a stimulating action on the bone marrow.

Asthma in Relation to Malaria.—Zallocco reports the case of a girl, aged 4, who for twenty days had had intermittent attacks of fever (from 39 to 40 C.), which began with a chill and ended with a profuse sweat. During these attacks, which lasted several hours, the child had more or less grave attacks of oppression, with intense respiratory agitation, severe coughing spells, but no expectoration. The patient was agitated and pale, the lips were cyanotic, the extremities were cold, the pulse was feeble and rapid, a state of asphyxia was imminent. Injections of camphorated oil were given. The dyspnea was typically expiratory and the onset and rapid development of the symptoms pointed clearly to an attack of typical asthma. Gradually, following an injection of epinephrine, respiration became freer, the state of agitation disappeared, and the child quieted down. Examination of the blood revealed the presence of malarial parasites. Quinine treatment was instituted (a daily injection of 0.5 Gm. of quinine). The fever disappeared after the fourth injection and the attacks of asthma ceased at once and did not reappear. The question arises whether the association of asthma with malaria was the result of a coincidence, or whether there was a relation of cause and effect.

Policlinico, Rome

35: 1047-1094 (June 4) 1928. General Practice Section

*Neoarsphenamine in Treatment of Mumps. B. Di Leonardo.—p. 1047.

Neoarsphenamine in the Treatment of Mumps.—Di Leonardo reports two cases of mumps in which he administered arsphenamine, with good and prompt results. On the day after intravenous injection of 0.3 Gm. of neoarsphenamine there was a sudden retrogression of all symptoms and the patient felt well. Di Leonardo thinks that, though his cases are few, the rapid improvement in both patients is an indication that arsphenamine has a specific action in mumps.

Rivista di Clinica Pediatrica, Florence

26: 329-408 (May) 1928

Relation of Vitamin B to Tolerance for Food Fats in Rapidly Growing Organism. G. Careddu.—p. 329.
*Anginose Syndrome in a Boy. P. Dotti.—p. 350.
Amino-Acids in Human Milk. C. Giaume.—p. 356.

Anginose Syndrome in a Boy.—The anginose syndrome is rare in children and adolescents, Dotti states. The distinction between angina pectoris on effort and decubital angina pectoris, though applicable, in some cases, to adults, is not so easy to retain with regard to children. However, in children the anginose syndrome shows a tendency to appear in the form of attacks arising during repose or sleep, rather than as the effect of fatigue. This is due, possibly, to the fact that the anatomic lesions of these patients are endocardiac valvular defects (most often insufficiency of the aortic valves, compound mitral defects with aortic insufficiency, of rheumatic origin), rheumatic aortitis or periaortitis from preceding pericarditis, pericarditis or pericardiac adhesions. More rarely, one sees chronic

myocarditis and syphilitic or arteriosclerotic aortitis, with sclerosis of the coronary arteries and with arterial hypertension, lesions that are often found in adult patients affected with angina pectoris on effort. In some cases the anginose attacks arising during repose or sleep are associated with manifestations that point to cardiac insufficiency (dyspnea, cyanosis, venous stasis). In Dotti's case, the patient, a boy, aged 15, was affected with mitro-aortic cardiopathy and had suffered previously from polyarthritis. The author discusses the pathogenesis of the case (which ended fatally—no necropsy permitted) and connects the patient's syndrome with an existing rheumatic aortitis.

Tumori, Milan

2: 205-310 (May-June) 1928

*Cultivation of Human Tumors. E. Gioja.—p. 205.
Adenoma Insulare of the Pancreas. C. Natali.—p. 244.

Cultivation in Vitro of Human Tumors.—Gioja emphasizes that the most favorable environmental conditions for the development of these cultures seem to be furnished by a small blood clot and by the addition to the plasma of a third part of extract of human embryo. The period of incubation, in cultures of human tumors, is rather long, almost always more than twenty-four hours, and not infrequently it runs up to forty-eight and even seventy-two hours. The growth is usually slow. The so-called "fertile period" varies greatly, the reason is not known. It ranges from three to eight or ten days, after which the culture remains stationary and the cells gradually die. The transportation of the cultures, in order to be successful, should, therefore, be done at the beginning of the fertile period. In one case of sarcoma, cells that stained well were found after a period of eighteen days, but, as a rule, at that stage all the cells have become necrotic. The central portion of the explant dies quite early; the development of the culture proceeds then chiefly from the marginal cells. There appeared to be no appreciable difference between the cultures prepared with blood plasma of the patient from whom the tumor had been taken and those prepared with blood plasma of an individual selected at random.

Archiv für Kinderheilkunde, Stuttgart

84: 161-240 (June 15) 1928

*Results of Treatment of Rickets with Milk Irradiated in a Carbon Dioxide Atmosphere. K. Scheer, A. Fuhrberg and A. Koss.—p. 161.
Melting Point of Erythrocytes Before and After Ultraviolet Irradiation. E. Rullmann.—p. 183.
Specific Dynamic Action of Foodstuffs in Children. E. Helmreich.—p. 194.
*Citric Acid Whole Milk in Fight Against Infant Mortality and Rickets. H. Weissenberg.—p. 200.
*Cardiac Symptoms in Scarlet Fever. F. Reinhard.—p. 210.
*Primary Tuberculous Lesion on Lip. J. Duken.—p. 223.
*Measles Without Exanthem. H. Koeppe.—p. 226.

Results of Treatment of Rickets with Milk Irradiated in a Carbon Dioxide Atmosphere.—The favorable results recently reported by Scheer and Rosenberg are confirmed in all respects by the present series of forty-two cases of Scheer et al. By this method a disagreeable odor and taste are not imparted to the milk by the ultraviolet rays. The milk may subsequently be pasteurized or boiled. In an entire year's experience no injurious results have been seen. In the cure of rickets it is as effective as any other remedy and it is far cheaper. It should have a particular importance in the field of prophylaxis.

Citric Acid Whole Milk in Fight Against Infant Mortality and Rickets.—For three and three-fourths years Weissenberg has used citric acid whole milk in the artificial feeding of sick and well infants under the care of the municipality of Gleiwitz. The mortality of the municipally cared for babies for the past seven years shows a remarkable decline. In 1921 it was 10.1 per cent. In 1923 it was 8.3 per cent. The citric acid whole milk diet was started in September, 1924. The mortality for that year was 5.9 per cent. For the next two years it was 3.3 and 3.2, respectively; for 1927, 2 per cent. In that year 1,282 infants were cared for in and outside of institutions. During the same period of seven years, the mortality for the infants of the city not receiving municipal care varied between 18.2 and 14.3 per cent and showed no regular decline. Weissenberg ascribes the remarkably low mortality of the municipally cared for babies in the last three years to the use of the citric acid whole milk.

Cardiac Symptoms in Scarlet Fever.—Reinhard found "scarlet fever heart" in eighty-four of 160 children who were under observation during the entire six weeks of the scarlet fever. This condition consists of a soft systolic noise over the apex, often not loud enough to deserve the name murmur. "Impurity" is often a better term. Accentuation or splitting of the second sounds, usually of the second pulmonary sound, may be noted. There is sometimes a slight enlargement of the heart toward the left. The pulse is often irregular. There were no subjective symptoms. In nineteen of the children the symptoms were present on admission on the second or third day of illness. In thirty-six children the symptoms appeared between the fifth and twenty-first day, in four in the fifth week and in two in the sixth week. In four children the time of the beginning of the cardiac symptoms was not definitely noted. In only ten children did the symptoms clear up in two or three weeks; in twenty-four they had disappeared entirely at the end of six weeks. Sixty children left the hospital with cardiac symptoms. It was possible to reexamine thirty-five of these children from three weeks to four months after their discharge. In only thirteen had the heart symptoms entirely disappeared. In eleven there was improvement. Three children whose scarlet fever dated from earlier periods were examined six and one-half, nine and nine and one-half months, respectively, after their discharge. In these children the murmur described had been noted during their illness; it was still distinctly perceptible. "Scarlet fever heart" does not appear to be dependent on the severity of the scarlet fever; neither is it connected with rheumatism or nephritis. Of the 160 children of this report only one developed endocarditis. Reinhard is inclined to consider the condition a slight degenerative process in the myocardium. Spontaneous cure appears to be the rule. Treatment is not needed.

Primary Tuberculous Lesion on Upper Lip of Two Year Old Child.—In this case there was no tuberculosis in the family, but shortly before his illness the child was in frequent close association with an adult with pulmonary tuberculosis who had just left a tuberculosis hospital. A peculiar small ulcer with a grayish-white coating appeared on the right side of the upper lip. It resembled an impetigo lesion but showed no tendency to crust formation. It was the only skin lesion on the body. It did not respond to treatment for impetigo and it did not spread. Three weeks later the cervical glands on the same side swelled. They softened and were incised. Creamy pus escaped. The wound did not heal and fistulas remained for several months. The tuberculin test was not applied until four months after the initial symptom. It was then strongly positive and the child was sent to the clinic. The ulcer on the lip was still present. Clinical and roentgenologic examinations of the thoracic organs were negative and no manifestations of tuberculosis could be discovered elsewhere in the body. General ultraviolet irradiation and a complete change of diet without local treatment brought about a rapid change in the lip ulcer. At the end of two weeks it had become transformed into a bluish scar. The course of the entire disease speaks in favor of primary tuberculosis.

Measles Without Exanthem.—Koeppe reports the case of a child, aged 1½ years, who developed fever (38.3 C.) with, perhaps, slight coryza eleven days after exposure to measles. The fever reached its highest point (38.7) three days later. No cause could be found. Examination of the ears was negative. Koplik's spots were absent. On the fourth day the tonsils were slightly reddened. On the fifth day the urine contained a trace of albumin and a few leukocytes and erythrocytes. On the seventh day Pirquet's test (which before the fever had been positive) was negative. On the next day the Mantoux test was positive. The urine was now normal, so that the fever could not be laid to cystitis. The subjective condition of the child was excellent. At this time it was noticed that the fever curve resembled that of measles. Fourteen days after the appearance of fever in this child, another child, who had been with her at that time, developed a measles exanthem. There was no other possible source of infection. Two years later the first child was again in the clinic and with two other children was exposed to measles. She did not contract the infection, while the other two children did.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

84: 181-362 (July 20) 1928

*New Methods of Treating Schizophrenia. F. von Horánszky.—p. 181.
Encephalographic Studies of Schizophrenics. W. Jacobi and H. Winkler. —p. 208.
Tuberculosis and Vegetative Nervous System. W. W. Michejew and E. M. Pawljutschenko.—p. 227.
Colloid Lability of Serum in Mental and Nervous Diseases. P. Büchler. —p. 251.
Physical Disorders in Paranoiacs. S. Fischer.—p. 280.
Syphilis of Basal Ganglia and Cerebellum; Rôle of Pallidal System in Fat Metabolism. B. Mogilnitzky and A. Tschernyscheff.—p. 285.
Precocious Puberty. W. Schumacher.—p. 325.
Changes in Basal Metabolism in Manic-Depressive Conditions. G. Langfeldt.—p. 330.
Multiple Myeloma and Nervous System. L. Pines and L. Pirogowa.—p. 332.

New Methods of Treatment in Schizophrenia.—The methods discussed by Horánszky are prolonged, artificially induced sleep, organotherapy and treatment with metallic salts. Sixteen cases were treated by each method. As a purely symptomatic treatment he found prolonged sleep induced according to Schäfgen's method of considerable value. In all but three out of sixteen cases, there was a symptomatic improvement. In two cases this was followed by full remission. His experiences with glandular preparations (testicular and ovarian extracts) were not encouraging, though he believes there may be possibilities in this method. A relatively large number of cases treated with metallic salts (chiefly manganese; in some cases, beryllium) showed improvement, but in no case was there full remission. The author admits that his material is too small to form the basis of final conclusions.

Deutsches Archiv für klinische Medizin, Leipzig

160: 129-256 (July) 1928

Influence of Alimentary Fat on Acetonuria and Acidosis in Diabetes. K. Hoesch.—p. 129.
*Rare Complications of Scarlet Fever. H. Frank.—p. 159.
Transient Glycosuria Without Blood Sugar Increase in Barbital Poisoning. K. E. Greinacher.—p. 173.
*Paroxysmal Cold Hemoglobinuria. F. Hoff and R. Kels.—p. 177.
Epidemiology and Course of Paratyphoid-N Infection. L. M. Dlugatsch. —p. 196.
Skin Capillaries in Arterial Hypertension; Influence of Nitrites. G. Deusch and A. Liepelt.—p. 207.
*Action of Synthetic Thyroxin in Persons with Exaggerated Thyroid Function. H. Baur.—p. 212.
Rôle of Blood in Transmineralization. C. Oehme and P. Török.—p. 233.

Rare Complications of Scarlet Fever.—On the third day of scarlet fever a child, aged 3, developed severe double bronchopneumonia, which, starting in the hilus region, spread over the entire lung. Hemolytic streptococci were found in the pus obtained by puncture. The case was further complicated by empyema of the knee joint. A child, aged 2, came down with scarlet fever on the fifth day of pneumonia. The pneumonia ran the usual course. A pneumococcus empyema healed clinically after two punctures. On the thirty-fifth day of illness empyema reappeared at the same site, accompanied by severe symptoms. Hemolytic streptococci, biologically typical for scarlet fever, were found in the pus. Pains in the right upper abdomen appeared on the seventh day of scarlet fever in a boy, aged 11. Not till forty-four hours later was the first, tentative, diagnosis of acute cholecystitis changed to that of appendicitis. Hemolytic streptococci were found in the exudate in the highly inflamed appendix. The latter presented a site of lessened resistance in the form of stricture and kinking. Diffuse *Streptococcus hemolyticus* peritonitis developed and the child died. In the course of scarlet fever a child, aged 6, had a mild otitis media. The hemolytic streptococcus was cultivated from the discharge. The otitis cleared up in three days, but two days later suppurative meningitis developed. Hemolytic streptococci grew in abundance in a specimen of cerebrospinal fluid placed in the incubator. A single puncture was made and the child recovered. Reexamined three months later, he was entirely well. Two children, aged 5 and 6, were each given 25 cc. of therapeutic serum intragluteally on the second day of scarlet fever, with resulting fall of temperature to normal by the next morning. In each case, on the fourth day of illness the temperature rose again and there was tenderness at the site of the injection of the serum. Four days later an abscess in the muscle at the site of injection was incised. In both cases the pus contained the hemolytic streptococcus in pure culture. There was an interval of four months between the two cases and in each the injection of serum had been made with the most careful asepsis. Either streptococci were already present in the tissues at the time of the injection or they entered the tissues after the injection. In either case, the injection produced a site of lessened resistance. These cases prove that as early as twenty-six hours after the beginning of scarlet fever streptococci may enter the circulating blood and the tissues. They show also that the serum exerts no direct bactericidal power in the tissue into which it is injected but is effective only when brought to the cells through the blood stream in the form of antitoxin. A woman gave birth to a child three days after the onset of scarlet fever. Two days after delivery the hemolytic streptococcus was found in the uterine secretion and was the exciting cause of an endometritis. Intravaginal examination had not taken place during the latter months of pregnancy. In all of these cases therapeutic serum had been given, but failed to prevent the complications or to influence their course.

Paroxysmal Cold Hemoglobinuria.—In two cases of hemoglobinuria on exposure to cold reported by Hoff and Kels, it was possible to distinguish two phases. The phenomena of the first were mainly of sympathicotonic character: rise in blood pressure and in temperature, increase of leukocytes, neutrophilia with shifting to the left (not involving the myelocytes), precipitation of erythrocytes and of eosinophils, deviation of the alkali reserve to the acid side, increase in blood sugar, increase of hemoglobin in the blood, hemoglobinuria. The phenomena of the second phase were of a parasympathicotonic character: fall in blood pressure and in temperature, decrease of leukocytes, relative lymphocytosis and eosinophilia, retrogression of the acidosis, decrease in blood sugar and in the hemoglobinemia and hemoglobinuria. The changes in the blood picture are typical of the "regular leukocytic reaction" seen in numerous other clinical conditions. The cholesterol and sodium chloride of the blood were subject to wide variations, but there was no regularity in their behavior, nor did they ever sink below normal. The greater the hemoglobin content of the urine, the smaller was the amount of urine and the less the concentration of sodium chloride and of hydrogen ions in the urine. In this disease there is a pathologic vasomotor reaction to cold, in consequence of which external chilling leads to chilling of the tissues. The local fall in temperature caused by this tissue chilling is a preliminary condition to the action of hemolysin in the organism.

Action of Synthetic Thyroxin in Persons with Exaggerated Thyroid Function.—Baur did not find that patients with hyperthyroidism were more sensitive than normal persons to thyroxin. A number of patients with adiposity and with lability of the vegetative system exhibited increased sensitiveness to synthetic thyroxin. The weight curves of patients with hyperthyroidism indicate that considerable variations take place as the result of treatment with thyroxin or with iodine.

Klinische Wochenschrift, Berlin

7: 1401-1448 (July 22) 1928. Partial Index

Medical Statistics. K. Freudenberg.—p. 1401.
*Diagnosis of Pregnancy from Urine by Demonstration of Hormone of Anterior Lobe of Pituitary. L. S. Aschheim and B. Zondek.—p. 1404.
*Metabolism of Patients with Cardiac Disease. D. Laszlo.—p. 1411.
*Differential Diagnosis Between Miliary Tumors and Tuberculosis in Roentgenogram. R. Lenk.—p. 1414.
Colloidal Silver: Diagnostic and Therapeutic Uses. J. Voigt.—p. 1417.
Wassermann Reaction as Standard Method. M. Stern and T. Frank. —p. 1419.
*Urinary Pigment in Pregnancy, Labor and Puerperium. O. Heesch.—p. 1421.
Purine Metabolism of Muscle and Mother Substance of Ammonia Originating in Muscle. J. K. Parnas.—p. 1423.
Metabolism in Pernicious Anemia: Liver Diet. K. Grassheim.—p. 1424.
Serum Disease — Precipitin Reaction — Anaphylactic Reaction. A. de Besche.—p. 1425.

Diagnosis of Pregnancy from the Urine by Demonstration of Hormone of Anterior Lobe of Pituitary.—Zondek presents the technic of the method worked out by him and Aschheim for demonstrating the hormone of the anterior lobe of the pituitary in small quantities of urine in early pregnancy. The method rests on the demonstration of blood points in the follicles and of corpora lutea in the ovaries of infantile mice injected with the urine.

Metabolism of Patients with Cardiac Disease.—Persons with decompensated cardiac defects require more than the ordinary amount of oxygen. After cessation of muscular activity, the increased oxygen values do not fall in the course of a few minutes, as in normal subjects, but remain high for a quarter of an hour or longer. Oxygen is required for the resynthesis into glycogen of the lactic acid formed during muscular activity, possibly also for resynthesis of other compounds. The fact that in persons with decompensated hearts the high oxygen values after work continue longer than in normal persons suggests that disturbance in resynthesis accompanies cardiac decompensation. Laszlo investigated particularly the metabolism of phosphoric acid, uric acid and creatinine. He found that the organism of a patient with a cardiac decompensation presents a specific phosphoric acid impoverishment; that it gives up phosphoric acid very unwillingly, and, in the stage of improvement, retains it; phosphoric acid added to the diet is retained. There was phosphoric acid impoverishment in the heart muscle and in the peripheral musculature, examined after death. He found, further, that the amount of creatinine and of uric acid excreted in the urine was above normal and that, in spite of a normal residual nitrogen, the creatine and uric acid of the blood are increased. These changes were far more pronounced after muscular work than in the resting state.

Differential Diagnosis Between Miliary Tumors and Miliary Tuberculosis in the Roentgenogram.—In miliary or submiliary tumorosis, the specks in the roentgen-ray picture increase in number and in size from the apex to the base of the lung, while in miliary tuberculosis the contrary is found. The conditions of photography may, Lenk points out, create an illusory increase in number in the base, so that the increase must be altogether striking before diagnostic importance is attached to it.

Urinary Pigment in Pregnancy, Labor and Puerperium.—In the healthy pregnant woman, the urinary pigment content of the urine is within normal limits. At the beginning of labor it lies at the upper limit of normal. If labor is brief and easy, it does not rise much beyond this limit, but if it is prolonged and the contractions are severe, the urinary pigment values rise far above normal. They fall rapidly in the puerperium; slight rises however may occur in this period. Heesch connects these changes with the functional condition of the liver.

Medizinische Klinik, Berlin

24: 1111-1146 (July 20) 1928. Partial Index

*Menstrual Disturbances with Ovarian Lesions. F. Heimann.—p. 1111.
Danger of Mercury and Amalgam Dental Fillings. A. Stock.—p. 1114.
C'td.
Gastric Disturbances in Lead Poisoning. K. Gutzeit.—p. 1117.
Tachycardia in School Children. O. Tezner.—p. 1117.
Infectiousness of Measles. F. Weiss.—p. 1120.
Calculating Infants' Diets. J. von Lukács and A. Ebel.—p. 1121.
Mechanical Treatment of Lumbago. L. Feilchenfeld.—p. 1122.
Ulcerous Tuberculosis of Buccal Mucosa. F. Laband and A. Hartung.—p. 1122.
Sequelae of Phlebitis of Varicose Veins of Lower Extremity. E. Orbach.—p. 1123.
Avoiding Errors in Plaster Dressings to Foot. C. Fervers.—p. 1125.
Improved Method of Quantitative Determination of Bilirubin. O. Weltmann and F. Jost.—p. 1125.

Menstrual Disturbances with Ovarian Lesions.—Among the ovarian causes of uterine bleedings, Heimann mentions precipitate maturation of the follicle and absence of deficient formation of corpora lutea as the most frequent. Follicular cyst (hydrops folliculi) may cause either hemorrhage or amenorrhea. Both amenorrhea and irregular bleedings have been ascribed to corpus luteum cysts. In tuberculosis of the ovary, cessation of menstruation is a late symptom; irregular bleedings are a prominent early symptom. Ovarian hematomas usually lead to menorrhagia. Irregular bleedings are the usual consequence of partial destruction of the ovary by a tumor (benign or malignant); when the destruction is complete, amenorrhea of course results. Absolute amenorrhea points to bilateral involvement of the ovaries. With carcinoma of the ovary there is frequently a continuous serosanguineous discharge. Malignant tumors of the ovary may be the cause of precocious menstruation, in what way is not entirely clear. Seven illustrative cases are briefly reported.

Monatsschrift für Kinderheilkunde, Leipzig

39: 385-576 (July) 1928

Roentgen-Ray Diagnosis of Pleuritic Processes in Infants and Children. H. Schönfeld.—p. 385.
*Treatment of Purulent Pleurisy in Children with Besredka's Vaccine. W. Mikulowski.—p. 472.
Extrapyramidal Symptom in Progressive Muscular Dystrophy. G. Petényi.—p. 479.
Secondary Effects of Diphtheria Antitoxic Serum. Chen Hung-ta.—p. 482.

Treatment of Purulent Pleurisy in Children with Besredka's Vaccine.—In twelve cases of purulent pneumococcic pleurisy, Mikulowski injected bouillon filtrate prepared according to Besredka's method into the pleural cavity after thoracentesis. Ten of the patients were cured.

Münchener medizinische Wochenschrift, Munich

75: 1231-1278 (July 20) 1928. Partial Index

Treatment of Diabetics. P. Müller.—p. 1231.
Pyelitis. E. Pflaumer.—p. 1235.
Differences Between Prenatal and Postnatal Hemoglobin in Man and Animals. H. Hentschel.—p. 1237.
Direct Operative Injuries. H. von Seemen.—p. 1239.
*Bile Acid Salts in Demonstration of Pathogenic Intestinal Bacteria in Blood. W. Pfannenstiel and T. Kortmann.—p. 1241.
*Blood Transfusion: Theory and Practice. P. Wichels and W. Lampe.—p. 1243.
*Roentgenotherapy of Bronchopneumonia in Children. S. Bothner.—p. 1245.
Influence of Iodine Applied to the Soil on Growth and Composition of Food Plants. E. Maurer, W. Schropp and H. Ducrue.—p. 1246.

Bile Acid Salts in Demonstration of Pathogenic Intestinal Bacteria in Blood.—Pfannenstiel and Kortmann tested a number of bile acid salts with various pathologic intestinal bacteria and found that taurocholic acid sodium was the most effective. Added to the blood in a concentration of from 1 to 10 per cent, it provides optimal growth conditions for all pathogenic intestinal bacteria. *Bacterium dysenteriae* of Shiga, which is checked in its growth by ox gall, responds especially well to taurocholic acid sodium. For practical purposes it is sufficient to add as much as will go on the point of a knife to 1 cc. of freshly removed blood.

Blood Transfusion: Theory and Practice.—Wichels and Lampe warn that the number of erythrocytes in the patient's blood may make all the difference between safety and danger in the transfusion of blood of a different group. Agglutination of the patient's erythrocytes by the serum of the donor may not take place when the concentration of erythrocytes in the patient's blood is above a certain point, i. e., comparatively normal, whereas in a patient with high grade anemia the agglutination may take place. He cites an illustrative case and presents the results of researches in vitro on this point. It appears that from the relations between the quantity and titer of the donor's serum and the number of erythrocytes in the patient's blood, one may form an opinion of the danger of transfusion of a blood that is "allowable" but of a different group.

Roentgenotherapy of Bronchopneumonia in Children.—Roentgen rays were applied by Bothner in seven cases of bronchopneumonia in young children. She used 10 per cent of the skin erythema dose filtered through 0.5 mm. of zinc plus 1 mm. of aluminum, the skin focal distance being 40 cm. In severe cases the treatment failed and in the light cases it could not be shown that the improvement was due to the rays.

Strahlentherapie, Berlin

29: 205-406 (June 30) 1928. Partial Index

Status of Roentgenology in Medicine. W. Kerl.—p. 207.
First Theory of Roentgen Rays: Review. A. Lampa.—p. 212.
Rôle of Adsorption in Analytic Chemistry. L. Moser.—p. 221.
Roentgentherapy of Skin with Very Small Doses of Ray. H. Fuhs and J. Konrad.—p. 230.
Roentgenotherapy of Skin Diseases. G. L. Lancashire.—p. 241.
*New Method of Treatment of Pruritus Senilis. J. Borak.—p. 245.
Radiotherapy of Warts. S. Brünauer.—p. 255.
Which Type of Pedunculated Condyloma Should be Treated by Radiotherapy? R. O. Stein.—p. 263.
Treatment of Psoriasis Vulgaris with Intravenous Injections of Acriflavine and Ultraviolet Rays. M. Oppenheim.—p. 268.
Finsen Light and Roentgen-Ray Treatment of Lupus. F. Thedering.—p. 274.
Ultrared-Ultraviolet and Roentgen-Ray Therapy of Erythrocyanosis Crurum Puellaris. A. Perutz.—p. 283.
Effect of Roentgen Ray on Hair Growth and Skin Pigmentation. K. Ullmann.—p. 291.
*Roentgenotherapy of Gonorrheal Arthritis. S. Grauer.—p. 303.

*Roentgenotherapy of Acute Exacerbations of Chronic Osteomyelitis. M. Sgalitzer.—p. 311.
*Roentgenotherapy of Hypertrophy of Prostate. R. Oppenheimer.—p. 315.
Effect of Radioactive Waters on Biologic and Biochemical Processes in Cells of Lower and Higher Organisms. J. Stoklasa.—p. 324.
*Physiologic Action of Ultraviolet Rays. A. Loewy.—p. 333.
Sensitization and Desensitization of Skin Against Ultraviolet Rays. A. Kropatsch and K. Linser.—p. 342.
New Therapeutic Quartz Lamp. E. Uhlmann.—p. 349.
Effect of Ordinary Daily Deposit of Dust and Dirt on Windowpanes and Quartz Plates on Penetrability of Ultraviolet Rays. W. Hausmann and O. Krumpel.—p. 353.
Biologic Study of Effect of Dust and Dirt on Quartz Plates on Penetrability of Ultraviolet Rays. Z. Oshima.—p. 358.
Radium Hemolysis. I. Yamasaki.—p. 363.
Physicochemical Study of Irradiated Proteins: Determination of Light Coagulation Rapidity of Various Proteins. M. Spiegel-Adolf.—p. 367.
Gaging of Sabouraud-Noiré-Dosimeters in Roentgen Units and Its Value in Practical Dosimetry. H. T. Schreus.—p. 375.
Wide Distribution of Gamma Rays and Their Measurement for Therapeutic Purposes. E. Kessler and F. Sluys.—p. 385.
Enhancing Action of Roentgen Ray by Means of Cerium Iodide-Dextrose Solution. J. Jacobs.—p. 403.

Treatment of Pruritus Senilis.—Borak regards senile pruritus as a disturbance of metabolism, especially of proteins. These proteins and their end-products accumulate in the tissues and sensitize the nerve endings, which causes the itching—just as do the carbohydrates in diabetes. He advises irradiation of the hypophysis and the thyroid. Of ten cases so treated, after all other treatment had failed to give relief, eight gained relief within a week and have remained cured—a period of two and one-half years. Two young patients with general pruritus were likewise relieved. In cases of localized pruritus—vulvar, anal, facial, back—the treatment is of no avail. These must be subjected to local treatment.

Roentgenotherapy of Gonorrheal Arthritis.—Grauer cites six cases in confirmation of his belief that roentgenotherapy is of value in gonorrheal arthritis, especially the acute and subacute forms. The effect is obtained quickly and is permanent. The usual methods of treatment heretofore employed may be combined with roentgenotherapy.

Roentgenotherapy of Acute Exacerbations of Chronic Osteomyelitis.—Sgalitzer employs small doses (about 15 per cent of the skin erythema dose) of the roentgen ray in these cases. The attack is cut short considerably, lasting only a few days. One treatment usually suffices; a second may be given, if necessary, two days later. The treatment is ineffective in cases in which a sequestrum is present.

Roentgenotherapy of Hypertrophy of Prostate.—Oppenheimer asserts that small doses of the roentgen ray, combined with massage, are effective in a majority of these cases. The irritation symptoms are lessened in degree, especially the frequent urination and vesical tenesmus. But the progress of the disease is not impeded, nor is chronic retention prevented. Acute retention, too, is unaffected, but hemorrhages are stopped. Large doses may have a very bad effect on an existing cystitis, increase the difficulty of performing a prostatectomy later, and retard or even prevent wound healing. Therefore this treatment must be used with great circumspection.

Physiologic Action of Ultraviolet Rays.—Loewy failed to find a specific action of the ultraviolet rays on basal metabolism, respiration or the pulse. He questions the reported results of Kestner and Lippmann-Völker and the statement that the benefits derived from heliotherapy are ascribable to the ultraviolet ray. Other important factors to be considered are climate, especially warmth and lessened atmospheric density.

Zeitschrift für Tuberkulose, Leipzig

51: 97-176 (June) 1928

*Acute Infraclavicular Form of Pulmonary Tuberculosis. A. Brecke.—p. 97.
*Pathogenesis of Tertiary Pulmonary Tuberculosis. F. Hochstetter.—p. 101.
Surgical Fixation of Vertebrae in Tuberculosis of Spine. M. Kirschner.—p. 106.
Interruption of Pregnancy Because of Pulmonary Tuberculosis. A. Mayer.—p. 109.
*Sterility and Genital Tuberculosis in Women. E. Vogt.—p. 114.
Pregnancy and Tuberculosis. E. Schrag.—p. 119.
*Roentgen-Ray Treatment of Tuberculous Iridocyclitis. W. Stock.—p. 122.
Tuberculosis of Skin and Immunity. P. Linser.—p. 124.
Specific Pulmonary Disease Associated with Lupus Pernio and Osteitis Tuberculosa Multiplex Cystoides. P. Hecht.—p. 125.
Effect of Season and Weather on Lupus Vulgaris. F. Veiel.—p. 129.
Natural and Artificial Sunlight in Pulmonary Tuberculosis: A Warning. H. F. Schoepfer.—p. 132.
*Intracutaneous Sweat Injections in Diagnosis of Tuberculosis. E. Dorn.—p. 134.
Experiments with Schröder's Tuberculosis Vaccine and Organ Extract (Th. Tb. V and Thymus Extract). G. Sticherling.—p. 137.

Acute Infraclavicular Form of Pulmonary Tuberculosis.—Brecke reports seven cases in which a severe infraclavicular infection suddenly appeared following a mild or persistent apical tuberculosis. In one of these cases the infraclavicular infection was evidently a fresh exogenous reinfection. In all the other cases it appeared to have originated from the apical disease. The basis of the infraclavicular infiltrate is a caseous pneumonic focus about which a perifocal inflammation may develop.

Pathogenesis of Tertiary Pulmonary Tuberculosis.—Hochstetter found that in twenty-three cases of apical tuberculosis in war veterans, the process had remained stationary or latent for from ten to fourteen years. On the other hand, of thirty-two cases of advanced pulmonary tuberculosis, in only three or four had there been a history of apical tuberculosis. He concludes that apical tuberculosis seldom progresses, and that, on the other hand, open pulmonary tuberculosis usually begins as an acute infection.

Sterility and Genital Tuberculosis in Women.—Statistics from the women's clinic of the university of Tübingen cited by Vogt show that in 7.2 per cent of the cases of sterility the cause was tuberculosis of the uterus. In some cases simple curettage cured the tuberculosis and ended the sterility. Under certain conditions it was found possible to attain the desired results by roentgen-ray treatment. If the tuberculosis has progressed so far that both fallopian tubes must be removed, there still remains the possibility of restoring the capacity for reproduction through implantation of an ovary into the uterus.

Roentgen Treatment of Tuberculous Iridocyclitis.—Stock reports the use of roentgen treatment in about 170 cases. In some of these cases very good results were obtained, a clinical cure being effected in from fourteen days to four weeks and in many instances the cure was permanent. In other cases marked improvement was brought about. The treatment was most effective in cases of pure iritis with formation of nodules. The prognosis was found to be better in younger patients than in those over 40 years of age. The results in pure cyclitis were less favorable. Though the roentgenotherapy was not entirely successful in the majority of cases of tuberculous iridocyclitis, the author believes that it marks a step forward in the treatment of a disease of such unfavorable prognosis.

Intracutaneous Sweat Injections in Diagnosis of Tuberculosis.—According to Dorn, the perspiration of persons with active tuberculosis contains substances with antigenic properties. Of 171 intracutaneous injections—forty with the patient's own perspiration and 131 with that of another person—81.3 per cent gave results in accordance with this theory. The reaction obtained was regarded as specific for tuberculosis. General and local reactions were absent. When persons having the disease in a light form were injected with perspiration from others in the same condition, the reaction was almost always negative. When the donor had tuberculosis in a severe, active form, the result was positive, except in cases in which the skin allergy of the recipient was weakened. It was not found possible to ascertain the presence of beginning active tuberculosis by means of the sweat injections.

Klinicheskaya Meditsina, Moscow

6: 729-783 (July) 1928

Colloidal "Liesegang Rings" as Structural Basis of Metamerism of Brain and Segmental Symptom of Hysteria. J. A. Anfimov.—p. 729.
Influence of Tropical Climate and Cultural Condition on Gastro-Intestinal Diseases in Turkestan. A. G. Alexeev.—p. 741.
*Mechanism of Spontaneous Hemorrhages in Scurvy. V. M. Novodvorskiy.—p. 753.
*Poisoning with Berthollet's Fluid. V. A. Tarasov.—p. 762.
*Clinical Value of Hemoclastic Crisis Test. O. K. Zacharova-Sidlyarevskaya.—p. 771.
Micromethod for Quantitative Determination of Inorganic Phosphorus of Blood. Y. Lepskiy and T. Brehme.—p. 775.
Syphilitic Myositis of Muscles of Calf of Leg. O. D. Garsh.—p. 778.
Encephalitis with Recurrent Appearance of Diplopia and Ptosis After Injection of Electrocolloidal Silver. R. I. Friedberg.—p. 780.
Quantitative Determination of Acetone in Urine. M. S. Roudoy.—p. 781.

Mechanism of Spontaneous Hemorrhages in Scurvy.—Novodvorskiy bases the following conclusions on fourteen cases of scurvy not complicated by secondary infection: The cause of spontaneous hemorrhages in scurvy lies in variations in the walls of the blood vessels. Under unfavorable conditions the agglutinating substance of the endothelial cells becomes permeable for erythrocytes and blood plasma. They penetrate into the tissues by diapedesis and ecchymoses and larger extravasations result. The quantity of thrombocytes is decreased to 60 per cent of the normal. This decrease, however, does not prolong the hemorrhage. The coagulative tendency of the blood is slightly above or around the upper limits of normal. Calcium and magnesium are considerably decreased. The fibrinogen and thrombin remain normal. The retractile capacity of the blood clot is unchanged.

Symptoms and Treatment of Poisoning with Berthollet's Fluid.—In poisoning with Berthollet's fluid (solution of sodium chloride and sodium hypochlorite), Tarasov differentiates two periods. In the first the blood changes predominate; in the second, the symptoms of disturbance are in the function of the excretory apparatus. The patient seldom recovers if the poison is not eliminated. The standard methods of treatment are efficient if used after venesection and followed by blood transfusion. The blood transfusion, however, cannot remove the consequences of hemolysis. The dosage and interval for blood transfusion require further study. In patients thus poisoned the sedimentation speed of erythrocytes is decreased.

Value of Hemoclastic Crisis Test.—Zacharova-Sidlyarevskaya used the Widal hemoclastic crisis test in the differential diagnosis of fifty-one cases of disease of the abdominal cavity. The patients with cholecystitis, cholangeitis or hepatic colic (thirteen in all) were the only ones who gave positive reactions.

Klinicheskiy J. Saratov. Universiteta, Saratof

4: 1-96 (Feb.) 1927

Pathogenesis of Icterus and Value of Hijmans van den Bergh's Reaction. N. S. Troizkiy and A. I. Loukova.—p. 5.
*Value of Climate of Plains and of Koumiss in Treatment of Tuberculosis. S. P. Selkin and M. I. Dalezkiy.—p. 17.
Cerebrospinal Anesthesia in Gynecologic Operations. A. V. Chochlov.—p. 25.
Tubal Insufflation. A. L. Moskvin.—p. 41.
Verruca Vulgaris. R. L. Zelikova.—p. 45.
Coloboma of the Nerve. A. S. Weiss.—p. 51.
Fibromyoma of Cervix and Its Influence on Pregnancy and Labor. F. M. Ganelis.—p. 55.
Severe Hemorrhage in Operation on Temporal Lobe Tumor. L. I. Boutourova.—p. 63.
Influenza. I. E. Yachontov.—p. 65.

Value of the Climate of the Plains and of Koumiss in Treatment of Tuberculosis.—The sanatorium from which this report issues is situated in the plains of southeastern Russia, where the climate is favorable to the application of heliotherapy and physical culture. Of 467 patients with pulmonary tuberculosis treated by these measures and with koumiss, 184 recovered clinically, 166 improved considerably, 118 improved somewhat, eleven did not change and one grew worse. Selkin and Dalezkiy present the hemograms of eighteen patients. They were divided into two groups: active and inactive tuberculosis. In the first group, consisting of nine patients, nuclear shifting was found in only one case, where it was insignificant. In four cases there was lymphocytosis. This group showed decrease in sedimentation speed of erythrocytes and an increase in hemoglobin and erythrocytes. In the second group, that of active tuberculosis, all the patients except one presented a sharp increase in sedimentation speed. Later there was a progressive decrease, but the sedimentation time never reached normal. The hemoglobin was below normal, and did not increase. Not one case showed lymphocytosis, nuclear shifting or neutrophils.

Bibliotek for Læger, Copenhagen

120: 481-527 (July) 1928

*Action of Acridine Defivatives on Blood Sugar Following Injections. O. J. Nielsen.—p. 481.
Epidemic Encephalitis with Changes in Optic Nerve. K. Winther.—p. 494.
Blood Sugar Determinations in Patients with Senile Cortical Cataract. C. L. Andersen.—p. 520.

Effect of Injection of Acridine Derivatives on Blood Sugar.—Nielsen describes his investigations following the injection of an acridine derivative in (1) fasting nondiabetics, (2) fasting diabetics, (3) nondiabetics to whom dextrose was given simultaneously, and (4) diabetics to whom food was given simultaneously. No particular fall in blood sugar value was noted in the nondiabetics. In the fasting diabetics more or less marked decrease in the blood sugar values occurred, but often no greater than in fasting diabetics without injection. No definite conclusion was reached in diabetics with simultaneous intake of food. He believes that acridine derivatives act directly on the pathologic processes underlying diabetes. This view will be discussed in a paper to follow.

Hospitalstidende, Copenhagen

71: 673-698 (June 28) 1928

Organic Preparations in Gynecologic Practice. J. V. Andersen.—p. 673.
*Skin Lesions as Symptoms of Tuberous Cerebral Sclerosis. A. Kristjansen.—p. 687.

Skin Lesions as Symptoms of Tuberous Cerebral Sclerosis.—Dermatologic examination made it possible to make the diagnosis during life in Kristjansen's patient, aged 27. He was degenerate mentally and had epilepsy. In the central part of the face hundreds of tumors appeared, from the barely visible to those of hemp-seed size, with two filiform tumors. Biopsy confirmed the diagnosis of sebaceous adenoma. On the neck and in the axillae were numerous subcutaneous fibromatous tumors from hemp-seed to pea size, together with a number of molluscous nevi on the back of the hands and fingers, fibromas on the palms of the hands and soles of the feet and diffuse keratosis. In the lumbar and sacral regions there were cutaneous intumescences of the size of the little finger nail. Histologic examination of one of these tumors showed it to consist of connective tissue with the collagenic fibrils transformed into thick colloid strands deficient in nuclei and in places necrotic. The frequent occurrence of colloid tumors in the lumbar region in tuberous multiple sclerosis of the brain is noted.

71: 727-754 (July 12) 1928

*Possibility of Phenotypical Repression of Dominant Germ of Blood Type. O. Thomsen.—p. 727.
*Receptor Development of Blood Corpuscles in the New-Born and in Infants. O. Thomsen.—p. 743.

Possibility of Phenotypical Repression of Dominant Germ of Blood Type.—Thomsen's evidence testifies against the occurrence of a phenotypical latent condition of the genotypical germ which usually manifests itself by dominant blood type characteristics, but he considers necessary the collection of considerably more material for study.

Receptor Development of Blood Corpuscles in the New-Born and in Infants.—In fifty-five persons belonging to blood group AB, chiefly adults, in whom Thomsen in the last year systematically determined the degree of sensitiveness of the A and B receptors, a notable weakness of one receptor, especially the A receptor, was not infrequently seen. There is therefore, he says, a doubt as to the certainly of being able to demonstrate in infants a weak A or B receptor, even with the most powerful test serum.

Hygiea, Stockholm

90: 513-560 (July 15) 1928

*Convalescent Serum in Prophylaxis of Measles. N. Johannsen.—p. 513.
Some Cases of Wave Osteoporosis. F. Englund.—p. 524.

Convalescent Serum in Prophylaxis of Measles.—During an epidemic of measles Johannsen treated forty-eight children with prophylactic convalescent serum according to Degkwitz. Thirty-seven and five-tenths per cent had measles, 50 per cent in abortive form, 33.3 per cent in a mild form, 16.6 per cent in the ordinary form. Complications (relatively mild otitides) occurred in 16.6 per cent. There were no deaths. Of sixty-two untreated children during this period, 88.7 per cent had measles, 27.2 per cent in a mild form, 72.8 per cent in the ordinary form or in a grave form, with various complications, many grave, in 52.8 per cent. Five patients (9 per cent) died. Twenty-three children were injected with convalescent serum before exposure to measles; 75 per cent of those exposed later had measles, mainly in abortive or mild form, without complications or deaths.